Vol. 1018 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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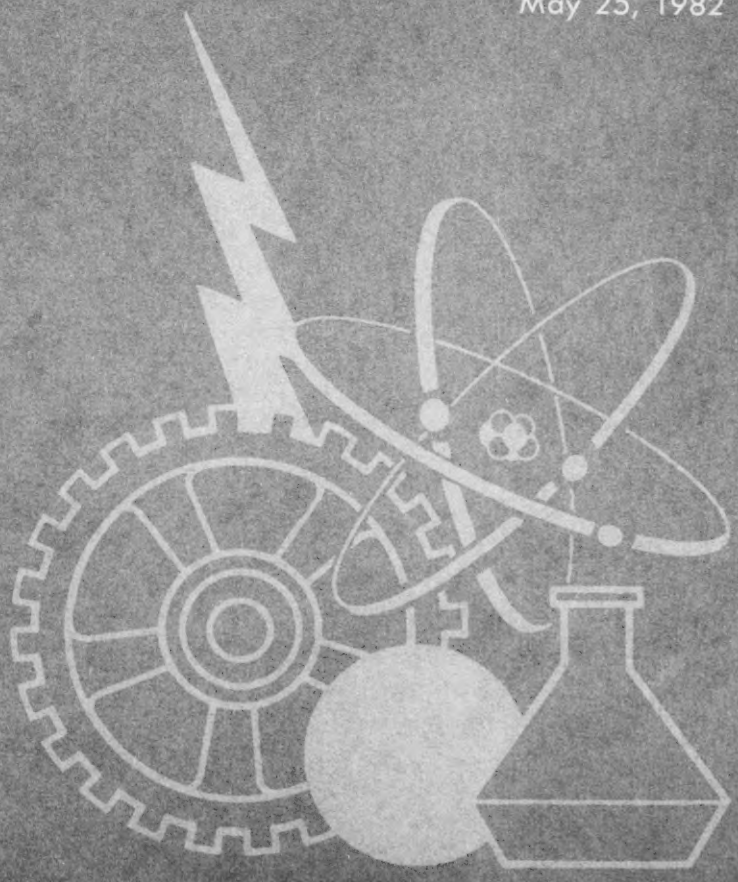

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

May 25, 1982 Volume 1018 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,900,645, Re. S.N. 301,140, Filed Sept. 11, 1981, Cl. 428/41, SCORED ADHESIVE LAMINATE, Burton D. Morgan, Owner of Record: *Morgan Adhesives Co., Stow, Ohio,* Attorney or Agent: Vern L. Oldham, et al., Ex. Gp.: 164

3,909,921, Re. S.N. 360,050, Filed Mar. 19, 1982, Cl. 29/527.2, METHOD AND APPARATUS FOR MAKING SHAPED ARTICLES FROM SPRAYED MOLTEN METAL OR METAL ALLOY, Reginald Gwyn Brooks, Owner of Record: *Osprey Metals, Neath, Wales,* Attorney or Agent: Ronald L. Grudziecki, Ex. Gp.: 321

4,182,490, Re. S.N. 357,403, Filed Mar. 12, 1982, Cl. 239/3, ELECTROSTATIC SPRAY GUN, James L. Kennon, Owner of Record: *Nordson Corp., Amherst, Ohio,* Attorney or Agent: Herbert C. Brinkman, Ex. Gp.: 313

4,184,636, Re. S.N. 342,286, Filed Jan. 25, 1982, Cl. 239/11, FLUIDIC OSCILLATOR AND SPRAY-FORMING OUTPUT CHAMBER, Peter Bauer, Owner of Record: *Inventor,* Attorney or Agent: B. F. Griffin, Jr., et al., Ex. Gp.: 313

4,263,115, Re. S.N. 357,563, Filed Mar. 12, 1982, Cl. 204/195P, ION-SELECTIVE ELECTRODE DEVICE FOR POLARGRAPHIC MEASUREMENT OF OXYGEN, Manfred Kessler, et al., Owner of Record: *Inventors,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

There are no publications this issue

Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. **120,240** (B-D); Becton, Dickinson and Co.; Reg. No. **442,281, same;** Reg. No. **507,883, same;** Reg. No. **712,691, same;** Reg. No. **717,640, same, filed** Jan. 23, 1980, D.C.N.J. (Newark), Doc. 80-189, *Becton, Dickinson and Co.* v. *Commerce Drug Co., Inc.* Consent judgment and stipulation and order of discontinuance filed Aug. 28, 1980.

Reg. No. **282,644** (OLYMPIA), Olympia Werke AG; Reg. No. **284,827, same, filed** Feb. 19, 1982, D.C., S.D. Fla. (Miami), Doc. 82-336-CIV-WMH, *Olympia Werke AG, et al.* v. *Olympia Import Export Corp., Inc., et al.*

Reg. No. **297,594** (VL AND DESIGN), Louis Vuitton, S.A., **filed** Apr. 7, 1981, D.C., S.D. Fla. (Miami), Doc. 81-0766-CIV-JLK, *Vuitton et Fils S.A.* v. *Sacha Ltd., Inc.* Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed May 29, 1981. **Same, filed** Mar. 31, 1981, D.C. Colo. (Denver), Doc. 81-A-413, *Vuitton et Fils S.A.* v. *Designer's III. Ltd., et al.* Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed Sept. 14, 1981. **Same, filed** Mar. 31, 1981, D.C. Colo. (Denver), Doc. 81-A-412, *Vuitton et Fils S.A.* v. *Jill Roth.* Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed Nov. 10, 1981. **Same, filed** Feb. 25, 1982, D.C., S.D. Fla. (Miami), Doc. 82-03780CIV-EPS, *Louis Vuitton S.A.* v. *Marsha Krugman.* **Same, filed** Mar. 9, 1982, D.C. Md. (Baltimore), Doc. J-82-642, *Louis Vuitton, S.A.* v. *Soretta of Reisterstown Plaza, Inc.,* **Same, filed** Mar. 26, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1918, *Louis Vuitton S.A.* v. *The Pushcart Job Lot Trading Corp.*

Reg. No. **411,975** (CARTIER), Cartier, Inc., **filed** July 14, 1981, D.C., S.D.N.Y., Doc. 81-Civ-4379, *Cartier, Inc.* v. *Luis Torres c/o Hot Pic-Ins Ltd.* Defendants are permanently enjoined and restrained from using any marks which so resemble plaintiff's trademark in advertising, offering for sale, etc. Filed Jan. 22, 1982.

Reg. No. 284,827. (See Reg. No. 282,644.)

Reg. No. 442,281. (See Reg. No. 120,240.)

Reg. No. **444,792** (HERITAGE), Champion International Corp.; Reg. No. **510,054** (BY DREXEL), **same;** Reg. No. **599,977** (HERITAGE), **same;** Reg. No. **748,464** (BY DREXEL), **same;** Reg. No. **951,221** (HERITAGE), Drexel Heritage Furnishings, Inc.; Reg. No. **962,559** (DREXEL), Drexel Heritage Furnishings, Inc.; Reg. No. **993,746** (DREXEL AND LEAVES DESIGN), Drexel Heritage Furnishings, Inc.; Reg. No. **993,747** (HERITAGE AND LEAVES DESIGN), Drexel Heritage Furnishings, Inc.; Reg. No. **1,005,340** (HERITAGE), Drexel Heritage Furnishings, Inc.; Reg. No. **1,005,825** (HERITAGE), Drexel Heritage Furnishings, Inc.; Reg. No. **1,007,403** (DREXEL), Drexel Heritage Furnishings, Inc.; Reg. No. **1,015,777** (HERITAGE), Champion International Corp.; Reg. No. **1,017,405** (DREXEL), Champion International Corp.; Reg. No. **1,019,056** (DREXEL HERITAGE AND LEAVES DESIGN), Drexel Heritage Furnishings, Inc.; Reg. No. **1,022,596** (DREXEL), Champion International Corp.; Reg. No. **1,022,715** (DREXEL), Drexel Heritage Furnishings, Inc.; Reg. No. **1,024,635** (DREXEL),

Champion International Corp.; Reg. No. **1,026,773** (DREXEL), Drexel Heritage Furnishings, Inc.; Reg. No. **1,027,181** (HERITAGE), Champion International Corp.; Reg. No. **1,027,539** (DREXEL), Champion International Corp.; Reg. No. **1,028,695** (HERITAGE), Champion International Corp.; Reg. No. **1,030,284** (DREXEL), Champion International Corp.; Reg. No. **1,031,366** (HERITAGE), Champion International Corp.; Reg. No. **1,031,474** (DREXEL), Champion International Corp.; Reg. No. **1,032,564** (DREXEL), Champion International Corp.; Reg. No. **1,032,565** (HERITAGE), Champion International Corp.; Reg. No. **1,034,045** (DREXEL), Champion International Corp.; Reg. No. **1,034,046** (HERITAGE), Champion International Corp.; Reg. No. **1,040,147** (HERITAGE), Champion International Corp.; Reg. No. **1,046,525** (HERITAGE), Champion International Corp.; Reg. No. **1,047,833** (HERITAGE), Champion International Corp.; Reg. No. **1,054,738** (DREXEL), Champion International Corp.; Reg. No. **1,055,898** (HERITAGE), Champion International Corp.; **filed** July 11, 1979, D.C., M.D. Fla. (Orlando), Doc. 79-353-ORL-CIV-R, *Drexel Heritage Furnishings, Inc.* v. *Marvin Weisman, et al.*

Reg. No. **507,840** (1098 LA), Ilco Corp.; Reg. No. **507,841** (1011), **same;** Reg. No. **507,842** (1001 EB), **same;** Reg. No. **507,843** (999), **same;** Reg. No. **507,844** (1022), **same;** Reg. No. **738,992** (H-1098-LA), **same;** Reg. No. **738,993** (1176), **same;** Reg. No. **738,994** (1307A), **same;** Reg. No. **739,343** (1092), **same;** Reg. No. **739,344** (1004), **same;** Reg. No. **739,345** (1145), **same;** Reg. No. **840,413** (1001 EN), **same;** Reg. No. **840,414** (R 1001 EN), **same;** Reg. No. **840,415** (1011 P), **same;** Reg. No. **840,417** (1004 A), **same;** Reg. No. **840,418** (1127 DP), **same;** Reg. No. **840,419** (X1014F), **same;** Reg. No. **840,420** (1127ES), **same;** Reg. No. **841,217** (O 1122 A), **same, filed** Feb. 15, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-0659, *Ilco Corp.* v. *Taylor Lock Co.*

Reg. No. 507,841. (See Reg. No. 507,840.)

Reg. No. 507,842. (See Reg. No. 507,840.)

Reg. No. 507,843. (See Reg. No. 507,840.)

Reg. No. 507,844. (See Reg. No. 507,840.)

Reg. No. 507,883. (See Reg. No. 120,240.)

Reg. No. 510,054. (See Reg. No. 444,792.)

Reg. No. **526,855** (CROSS), A. T. Cross Co.; Reg. No. **641,038, same;** Reg. No. **925,913, same, filed** Mar. 3, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1295 CSH, *A. T. Cross Co.* v. *Medana Watch Corp.*

Reg. No. **597,721** (ROTO-ROOTER), Roto Rooter Corp.; Reg. No. **745,984** (ROTO-ROOTER AND DESIGN), **same, filed** Nov. 12, 1980, D.C. Colo. (Denver), Doc. 80-W-1563, *Roto Rooter Corp.* v. *William Flaharty,* doing business as Root'N'Rooter.

Reg. No. 599,977. (See Reg. No. 444,792.)

Reg. No. 641,038. (See Reg. No. 526,855.)

Reg. No. **657,756** (DESIGN OF CROWN), Montres Rolex, S.A., **filed** Apr. 10, 1981, D.C., N.D. Ga. (Atlanta), Doc. C81-653A, *Rolex Watch U.S.A., Inc.* v. *Richard Haggert.* Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed Feb. 9, 1982. **Same, filed** Mar. 18, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1692 VLB, *Montres Rolex, S.A.* v. *Dennis Synder.*

Reg. No. **678,919** (PAPPAGALLO), The United States Shoe Corp.; Reg. No. **1,012,468** (SHOP FOR PAPPAGALLO), **same, filed** Mar. 3, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1271, *United States Shoe Corp.* v. *Ormont Shoe Corp., et al.*

Reg. No. **679,519** (RADIO SHACK), Tandy Corp.; Reg. No. **706,962, same;** Reg. No. **712,290, same;** Reg. No. **796,908, same;** Reg. No. **851,206** (THE SHACK), **same;** Reg. No. **1,008,073** (RADIO SHACK), **same;** Reg. No. **1,072,798** (RADIO SHACK), **same;** Reg. No. **1,076,858** (RADIO SHACK), **same;** Reg. No. **1,080,989** (RADIO SHACK), **same;** Reg. No. **1,104,245** (RADIO SHACK), **same;** Reg. No. **1,108,264** (SHACK), **same, filed** Mar. 14, 1980, D.C., N.D. Tex. (Fort Worth), Doc. CA4-80-68E, *Tandy Corp.* v. *Radio Hut, Inc., et al.*

Reg. No. **705,902** (SONY), Sony Corp.; Reg. No. **770,275, same;** Reg. No. **777,400, same;** Reg. No. **785,967, same;** Reg. No. **797,113, same;** Reg. No. **801,885, same;** Reg. No. **824,847, same;** Reg. No. **870,311, same;** Reg. No. **870,452, same** Reg. No. **876,637, same;** Reg. No. **877,763, same;** Reg. No. **877,772, same;** Reg. No. **878,200, same;** Reg. No. **878,213, same;** Reg. No. **884,448, same;** Reg. No. **885,111, same;** Reg. No. **885,451, same;** Reg. No. **885,802, same;** Reg. No. **885,860, same;** Reg. No. **886,111, same;** Reg. No. **886,119, same;** Reg. No. **886,128, same;** Reg. No. **886,339, same;** Reg. No. **888,316, same, filed** Dec. 7, 1979, D.C., S.D. Fla. (West Palm Beach), Doc. 79-6671-CIV-JCP, *Sony Corp., et al.* v. *Paul Soni of America, Inc., et al.* **Same, filed** Feb. 18, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0924, *Sony Corp., et al.* v. *Renam Trading Co., Inc.* **Same, filed** Mar. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1535 HFW, *Sony Corp., et al.* v. *Ghanshyam Kalwani, et al.* **Same, filed** Mar. 19, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1636, *Sony Corp., et al.* v. *Kent Import Export Co., Inc., et al.*

Reg. No. 706,962. (See Reg. No. 679,519.)

Reg. No. **707,656** (AMWAY), Amway Corp., **filed** Jan. 31, 1977, D.C.N.J. (Newark), Doc. 77-182, *Amway Corp.* v. *AAAAmway Pest Control and Basement Waterproofing Co., et al.* Order dismissing action filed Nov. 23, 1977. Case reopened on Apr. 7, 1978. Order granting permanent injunction against defendants filed May 9, 1978.

Reg. No. 712,290. (See Reg. No. 679,519.)

Reg. No. 712,691. (See Reg. No. 120,240.)

Reg. No. 717,640. (See Reg. No. 120,240.)

Reg. No. **718,705** (RAMADA INN), Ramada Inns, Inc.; Reg. No. **741,047** (RAMADA INN AND DESIGN), **same;** Reg. No. **849,591** (RAMADA), **same, filed** Dec. 28, 1979, D.C., W.D. Mo. (Kansas City), Doc. 79-1121-CV-W-6, *Ramada Inns, Inc.* v. *Patel Arvind, et al.* **Same, filed** Feb. 13, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80-133-Civ-J-M, *Ramada Inns, Inc.* v. *Kamel Said Haddad, et al.* **Same, filed** Apr. 14, 1981, D.C., N.D. Miss. (Clarksdale), Doc. 81-62-OS-O, *Ramada Inns, Inc.* v. *Davis Equity Corp., et al.* **Same, filed** Apr. 24, 1981, D.C., W.D. Mo. (Kansas City), Doc. 81-0320-CV-W-3, *Ramada Inns, Inc.* v. *Garrett Western Corp., et al.*

Reg. No. 738,992. (See Reg. No. 507,840.)

Reg. No. 738,993. (See Reg. No. 507,840.)

Reg. No. 738,994. (See Reg. No. 507,840.)

Reg. No. 739,343. (See Reg. No. 507,840.)

Reg. No. 739,344. (See Reg. No. 507,840.)

Reg. No. 739,345. (See Reg. No. 507,840.)

Reg. No. 741,047. (See Reg. No. 718,705.)

Reg. No. 745,984. (See Reg. No. 597,721.)

Reg. No. 748,464. (See Reg. No. 444,792.)

Reg. No. 770,275. (See Reg. No. 705,902.)

Reg. No. 777,400. (See Reg. No. 705,902.)

Reg. No. 785,967. (See Reg. No. 705,902.)

Reg. No. **786,905** (ANCO AND DESIGN), Anco International Corp.; Reg. No. **934,073** (ANCO AND CIRCLE DESIGN), **same, filed** Mar. 2, 1982, D.C.N.J. (Newark), Doc. 82-611, *Anco Foods Corp. and Anco International Corp.* v. *An/Co Merchandising Co., Inc., et al.*

Reg. No. 796,908. (See Reg. No. 679,519.)

Reg. No. 797,113. (See Reg. No. 705,902.)

Reg. No. 801,885. (See Reg. No. 705,902.)

Reg. No. **802,789** (MOON SHINE AND DESIGN), Alec C. Gunter; Reg. No. **1,158,280** (MOONSHINE AND DESIGN), **same, filed** Feb. 19, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-70618, *Alec C. Gunter* v. *Faygo Beverages, Inc.*

Reg. No. **822,713** (WRL AND DESIGN), Western Research Laboratories, Inc., **filed** June 18, 1980, D.C. Colo. (Denver), Doc. 80-z-776, *Western Research Laboratories, Inc.* v. *Calvin Scott & Co., Inc.* Action dismissed with prejudice as to Plaintiff and Defendant filed Aug. 5, 1981.

Reg. No. 824,847. (See Reg. No. 705,902.)

Reg. No. **837,303** (EMPRESS AND DESIGN), Empress Travel Service, Inc., **filed** Mar. 19, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1741 RJW, *Empress Travel Service, Inc.* v. *Gilda Travel, Ltd. doing business as Empress Travel.*

Reg. No. **840,186** (ROYAL-GLOBE INSURANCE ETC. AND DESIGN), Royal Insurance Co., Ltd.; Reg. No. **843,017** (ROYAL INSURANCE COMPANY, LIMITED AND DESIGN), **same;** Reg. No. **888,464** (ROYAL GUARD), **same, filed** Mar. 15, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-527A, *Royal Indemnity Co., also known as Royal Insurance* v. *Royale Insurance Agency, Inc., doing business as Royal Insurance Agency.*

Reg. No. 840,413. (See Reg. No. 507,840.)

Reg. No. 840,414. (See Reg. No. 507,840.)

Reg. No. 840,415. (See Reg. No. 507,840.)

Reg. No. 840,417. (See Reg. No. 507,840.)

Reg. No. 840,418. (See Reg. No. 507,840.)

Reg. No. 840,419. (See Reg. No. 507,840.)

Reg. No. 840,420. (See Reg. No. 507,840.)

Reg. No. 841,217. (See Reg. No. 507,840.)

Reg. No. 843,017. (See Reg. No. 840,186.)

Reg. No. 849,591. (See Reg. No. 718,705.)

Reg. No. 851,206. (See Reg. No. 679,519.)

Reg. No. **868,250** (ELAN), The Wella Corp., **filed** Mar. 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1358 GLG, *The Wella Corp.* v. *Allant International Co., Inc., et al.*

Reg. No. 870,311. (See Reg. No. 705,902.)

Reg. No. 870,452. (See Reg. No. 705,902.)

Reg. No. 876,637. (See Reg. No. 705,902.)

Reg. No. 877,763. (See Reg. No. 705,902.)

Reg. No. 877,772. (See Reg. No. 705,902.)

Reg. No. 878,200. (See Reg. No. 705,902.)

Reg. No. 878,213. (See Reg. No. 705,902.)

Reg. No. 884,448. (See Reg. No. 705,902.)

Reg. No. 885,111. (See Reg. No. 705,902.)

Reg. No. 885,451. (See Reg. No. 705,902.)

Reg. No. 885,802. (See Reg. No. 705,902.)

Reg. No. 885,860. (See Reg. No. 705,902.)

Reg. No. 886,111. (See Reg. No. 705,902.)

Reg. No. 886,119. (See Reg. No. 705,902.)

Reg. No. 886,128. (See Reg. No. 705,902.)

Reg. No. 886,339. (See Reg. No. 705,902.)

Reg. No. 888,316. (See Reg. No. 705,902.)

Reg. No. 888,464. (See Reg. No. 840,186.)

Reg. No. **894,397** (ACCUSPHERE), Organon, Inc., **filed** Nov. 8, 1978, D.C., N.D. Ga. (Atlanta), Doc. C78-1920A, *Organon, Inc.* v. *The J. B. Williams Co., Inc., et al.* Dismissed with prejudice on Jan. 15, 1980.

Reg. No. **904,499** (S-T-R-E-T-C-H & SEW), Stretch & Sew, Inc.; Reg. No. **943,019** (S-T-R-E-T-C-H & SEW AND DESIGN), **same;** Reg. No. **971,584** (S-T-R-E-T-C-H & SEW), **same;** Reg. No. **981,389** (S-T-R-E-T-C-H AND SEW FABRICS AND DESIGN), **same;** Reg. No., **1,049,850** (S-T-R-E-T-C-H & SEW FABRICS), **same;** Reg. No. **1,082,941** (BASIC 8), **same; filed** Mar. 16, 1982, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 82-6152-Civ-JAG, *Stretch & Sew, Inc.* v. *Theodore J. and Gail Shudark.*

Reg. No. **913,859** (RED WING), Red Wing Shoe Co.; Reg. No. **918,991** (RED WING SHOES AND DESIGN), **same;** Reg. No. **934,188** (RED WING SHOES AND DESIGN), **same, filed** Mar. 22, 1982, D.C., N.D. Iowa (Cedar Rapids), Doc. 82-2025, *Red Wing Shoe Co.* v. *Kollmann Shoe and Bike Shop, et al.*

Reg. No. **914,431** (TAYLOR RENTAL CENTER AND DESIGN), Taylor Rental Corp.; Reg. No. **977,017** (TAYLOR RENTAL), **same;** Reg. No. **977,519** (TAYLOR), **same;** Reg. No. **977,901** (THINGS TO RENT FOR EVERY EVENT), **same, filed** Mar. 19, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-1269, *Taylor Rental Corp.* v. *Rental Works, Inc., et al.*

Reg. No. **917,866** (MR. TRANSMISSION), Mr. Transmission, Inc., **filed** Sept. 1, 1981, D.C., M.D. Ga. (Macon), Doc. 81-73-ALB, *Mr. Transmission, Inc.* v. *Thomas E. Dillinger, doing business as Master Transmission.* Plaintiff is the owner of Reg. No. 917,866. Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed Mar. 2, 1982.

Reg. No. 918,991. (See Reg. No. 913,859.)

Reg. No. 925,913. (See Reg. No. 526,855.)

Reg. No. 934,073. (See Reg. No. 786,905.)

Reg. No. 934,188. (See Reg. No. 913,859.)

Reg. No. **941,013** (JONES NEW YORK), Jones Apparel Group, Inc., **filed** Mar. 5, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-1001, *Jones Apparel Group, Inc.* v. *Krista Sales Co., Inc., et al.*

Reg. No. 943,019. (See Reg. No. 904,499.)

Reg. No. 951,221. (See Reg. No. 444,792.)

Reg. No. **951,411** (SMART SIZE), Lane Bryant, Inc., **filed** Apr. 10, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-0857, *Lane Bryant, Inc.* v. *Catherine's Stout Shoppe, Inc.* Stipulation of parties of dismissal with prejudice filed Dec. 3, 1981.

Reg. No. **951,780** (SAXON), Saxon Industries, Inc., **filed** Mar. 19, 1982, D.C.N.J. (Newark), Doc. 82-863, *Saxon Industries, Inc.* v. *Esgraph, Inc., et al.*

Reg. No. 962,559. (See Reg. No. 444,792.)

Reg. No. 971,584. (See Reg. No. 904,499.)

Reg. No. 977,017. (See Reg. No. 914,431.)

Reg. No. 977,519. (See Reg. No. 914,431.)

Reg. No. 977,901. (See Reg. No. 914,431.)

Reg. No. **980,955** (WALT DISNEY WORLD), Walt Disney Productions, **filed** Sept. 28, 1977, D.C., N.D. Ill. (Chicago), Doc. 77 C 3615, *Walt Disney Productions* v. *C. Ascar Travel Service.* **Same, filed** Feb. 19, 1980, D.C. Conn. (Hartford), Doc. H80-108, *Walt Disney Productions* v. *Dawnbreakers, Inc., et al.* Final Judgment enjoining and restraining Defendant from using the name or mark DISNEY WORLD SUMMER CAMP, or any other name confusingly similar to Plaintiff's WALT DISNEY WORLD filed Apr. 29, 1980.

Reg. No. 981,389. (See Reg. No. 904,499.)

Reg. No. 993,746. (See Reg. No. 444,792.)

Reg. No. 993,747. (See Reg. No. 444,792.)

Reg. No. **995,858** (CARIBU), Briarcliff Clothes Ltd., **filed** Oct. 19, 1979, D.C., S.D.N.Y., Doc. 79-Civ-5705, *Briarcliff Clothes Ltd.* v. *All Goods SA, Inc., et al.* Final Judgment on Consent filed Feb. 14, 1980.

Reg. No. 1,005,340. (See Reg. No. 444,792.)

Reg. No. 1,005,825. (See Reg. No. 444,792.)

Reg. No. **1,006,464** (PERSPECTIVES INTERNATIONAL), Guy Anselmo, Jr., **filed** Aug. 28, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2044, *Guy Anselmo, Jr., doing business as Perspectives International* v. *Perspectives International.* Order dismissing action without prejudice for failure to prosecute filed Dec. 30, 1981.

Reg. No. 1,007,403. (See Reg. No. 444,792.)

Reg. No. 1,008,073. (See Reg. No. 679,519.)

Reg. No. 1,012,468. (See Reg. No. 678,919.)

Reg. No. 1,015,777. (See Reg. No. 444,792.)

Reg. No. 1,017,405. (See Reg. No. 444,792.)

Reg. No. 1,019,056. (See Reg. No. 444,792.)

Reg. No. **1,020,793** (DESIGN OF RABBIT HEAD), Playboy Enterprises, Inc., **filed** Jan 15, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-0204, *Playboy Enterprises, Inc.* v. *Leonard Smith, et al.* Plaintiff's trademark registration is good and valid in law. Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed May 30, 1980. **Same, filed** Dec. 18, 1979, D.C., S.D.N.Y., Doc. 79-Civ-6752, *Playboy Enterprises, Inc.* v. *Alfred Mosiello, et al.* Defendants are permanently enjoined from further infringment of Plaintiff's trademark. Filed Dec. 5, 1980. **Same, filed** June 12, 1981, D.C., S.D.N.Y., Doc. 81-Civ-3673 MJL, *Playboy Enterprises, Inc.* v. *Prismatix Decal, Inc.* **Same, filed** Aug. 11, 1981, D.C.N.J. (Camden), Doc. 81-2595, *Playboy Enterprises, Inc.* v. *Continental Key, Inc.* **Same, filed** Aug. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-5058, *Playboy Enterprises, Inc.* v. *Jomar Industries, et al.* **Same, filed** Aug. 11, 1981, D.C.N.J. (Newark), Doc. 81-2525, *Playboy Enterprises, Inc.* v. *Staley Mfg. Co., Inc., et al.* Order dismissing action filed Mar 22, 1982.

Reg. No. 1,022,596. (See Reg. No. 444,792.)

Reg. No. 1,022,715. (See Reg. No. 444,792.)

Reg. No. 1,024,635. (See Reg. No. 444,792.)

Reg. No. 1,026,773. (See Reg. No. 444,792.)

Reg. No. 1,027,181. (See Reg. No. 444,792.)

Reg. No. 1,027,539. (See Reg. No. 444,792.)

Reg. No. 1,028,695. (See Reg. No. 444,792.)

Reg. No. 1,030,284. (See Reg. No. 444,792.)

Reg. No. 1,031,366. (See Reg. No. 444,792.)

Reg. No. 1,031,474. (See Reg. No. 444,792.)

Reg. No. 1,032,564. (See Reg. No. 444,792.)

Reg. No. 1,032,565. (See Reg. No. 444,792.)

Reg. No. 1,034,045. (See Reg. No. 444,792.)

Reg. No. 1,034,046. (See Reg. No. 444,792.)

Reg. No. 1,040,147. (See Reg. No. 444,792.)

Reg. No. **1,044,068** (BIG O TIRES AND DESIGN), Big O Tire Dealers, Inc., **filed** Mar. 31, 1981, D.C. Colo. (Denver), Doc. 81-M-421, *Big O Tire Dealers, Inc.* v. *Constantine "Dean" Gober.* Consent Judgment and Order filed Aug. 21, 1981.

Reg. No. 1,046,525. (See Reg. No. 444,792.)

Reg. No. 1,047,833. (See Reg. No. 444,792.)

Reg. No. 1,049,850. (See Reg. No. 904,499.)

Reg. No. **1,052,064** (PLUS ACCOUNT), Hollywood Federal Savings and Loan Association, **filed** Mar. 18, 1982, D.C., M.D. Fla. (Tampa), Doc. 82-0274 CIV T GC, *Hollywood Federal Savings and Loan Association* v. *Freedom Savings and Loan Association.*

Reg. No. 1,054,738. (See Reg. No. 444,792.)

Reg. No. 1,055,898. (See Reg. No. 444,792.)

Reg. No. **1,070,439** (DATAGUARD), Novo Communications, Inc., **filed** Mar. 1, 1982, D.C.N.J. (Newark), Doc. 82-592, *Novo Communications* v. *Dataguard Corp.*

Reg. No. 1,072,798. (See Reg. No. 679,519.)

Reg. No. 1,076,858. (See Reg. No. 679,519.)

Reg. No. 1,080,989. (See Reg. No. 679,519.)

Reg. No. 1,082,941. (See Reg. No. 904,499.)

Reg. No. **1,095,989** (VERDI), M/M Luggage Co., Inc., **filed** Mar. 2, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1264, *M/M Verdi International, Inc.* v. *Daewoo International (America) Corp.*

Reg. No. 1,104,245. (See Reg. No. 679,519.)

Reg. No. 1,108,264. (See Reg. No. 679,519.)

Reg. No. **1,147,691** (TUCK-A-LINER), Marvin I. May, doing business as Tite Nites, **filed** Feb. 19, 1982, D.C., W.D. Mo. (Kansas City), Doc. 82-0120-CV-W-7, *Tite Nites, Inc.* v. *M.D. Wheat, Inc., doing business as E.Z. Sleep Waterbeds.*

Reg. No. **1,147,723,** (MISCELLANEOUS DESIGN), Sasson Jeans, Inc., **filed** June 29, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-3208 WPG, *Sasson Jeans, Inc.* v. *Ivan's Sportswear.* **Same, filed** Oct. 23, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-5494 WPG, *Sasson Jeans, Inc.* v. *Kahn's Retail Clothier.*

Reg. No. 1,158,280. (See Reg. No. 802,789.)

Reg. No. **1,177,625** (OFF THE RECORD), Westwood One, Inc., **filed** Feb. 25, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 0976 *LTL, Westwood One, Inc.* v. *National Broadcasting Co., Inc.*

Reg. No. **1,180,592** (THE HOT POTATO AND DESIGN), Fast Food Management, Inc., **filed** Mar. 9, 1982, D.C. Puerto Rico (San Juan), Doc. 82-496, *Fast Food Management, Inc.* v. *Louis H. Dexter.*

Status of PTO Services

The following is an update of the status of PTO services as of Ap 28, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	3.5	See note 1 below.
Filing Receipts:			
Patents	22	88	Reduction of 4 days since last report.
Trademarks	30	27	Reduction of 2 days since last report.
Patent Copies:			
Window Coupons	5	85% within 5 days 95% within 10 days	Significant improvements since last report.
Mail Coupons*	15	71% within 15 days 99% within 20 days	
Letter Orders*	20	98% within 20 days	
Certified Copies:			
Trademark Regs.	30	27	
Applications-As-Filed*	20	95% within 15 days	See note 2 below.
File-Wrapper/Contents*		20% within 15 days 85% within 30 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Room:			
Filing Drawings	21	16	
Filing Reg. Certificates	3	2	
Patent Assignments	15	41	Backlog due to unavailable funding.
Trademark Assignments	21	101	Backlog due to unavailable funding.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	On Schedule	

*Figures exclude mail processing and delivery time.

Note 1: Mail Processing and Delivery

The statistics for mail processing and delivery indicate the average time required to process mail from the time it is received in the Mail Room of the Patent and Trademark Office until it is delivered to the organization. For example, it reflects the time it takes for a paper to be delivered to an Examining Group, not the Examiner. Mail often receives additional clerical processing in the Group, depending on the type of document. It is not unusual for mail to take a few weeks to actually reach the Examiner. However, the official receipt date is that which is stamped in the Mail Room, reflecting the date the mail was received in the Office.

Note 2: Certified Copies

New reporting categories are instituted for certified copies this month. No goal is indicated for the service time for providing certified copies of the file-wrapper-and-contents. The time required to provide a certified copy is largely determined by the accessibility of the file. In the event that the file is lost, or in remote storage, considerable delay may be experienced before the copy can be provided. If the file is lost, the Office will initiate file reconstruction which may require months to complete.

The Walk-Up Certification service is offered only in the PTO's Public Serarch Room on an experimental basis. To use the service, requestors are responsible for reproducing the document to be certified, placing it in correct order, and providing the reproduced copy and the original to the certification assistant in the Public Search Room.

May 3, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of May 25, 1982

D. 262,911	4,299,153	4,310,802	4,317,011
3,887,492	4,299,776	4,310,915	4,317,066
4,120,839	4,299,777	4,311,507	4,317,235
4,125,377	4,299,817	4,311,655	4,317,322
4,148,950	4,300,448	4,311,762	4,317,327
4,170,189	4,300,845	4,311,874	4,317,444
4,192,682	4,300,850	4,312,025	4,317,455
4,210,701	4,300,899	4,312,296	4,317,732
4,225,531	4,301,485	4,312,354	4,317,867
4,244,409	4,301,511	4,312,680	4,317,927
4,246,213	4,301,770	4,312,762	4,317,985
4,252,335	4,301,958	4,312,790	4,318,048
4,252,741	4,302,070	4,312,817	4,318,235
4,256,203	4,302,075	4,313,133	4,318,266
4,256,624	4,302,228	4,313,134	4,318,293
4,259,772	4,302,283	4,313,174	4,318,305
4,259,969	4,302,297	4,313,202	4,318,436
4,263,551	4,302,751	4,313,203	4,318,575
4,266,238	4,303,739	4,313,236	4,318,623
4,269,722	4,303,805	4,313,287	4,318,647
4,270,103	4,304,158	4,313,305	4,318,707
4,273,799	4,304,883	4,313,488	4,318,715
4,277,647	4,304,951	4,313,496	4,318,754
4,277,940	4,305,796	4,313,575	4,318,840
4,280,227	4,305,913	4,313,761	4,318,967
4,282,401	4,306,003	4,313,793	4,318,981
4,282,482	4,306,832	4,314,529	4,319,300
4,283,341	4,307,062	4,314,809	4,319,542
4,284,170	4,307,107	4,314,878	4,319,658
4,284,662	4,307,415	4,314,907	4,319,952
4,285,370	4,307,427	4,314,919	4,320,010
4,288,587	4,307,430	4,314,925	4,320,192
4,289,661	4,307,574	4,315,145	4,320,201
4,289,675	4,308,072	4,315,467	4,320,246
4,289,961	4,308,133	4,315,485	4,320,753
4,290,261	4,308,193	4,315,589	4,320,827
4,290,555	4,308,287	4,315,992	4,320,955
4,292,484	4,308,315	4,316,379	4,321,686
4,294,038	4,308,580	4,316,423	4,322,130
4,295,307	4,309,506	4,316,480	4,322,193
4,296,706	4,309,538	4,316,546	4,322,307
4,297,433	4,309,875	4,316,606	4,322,482
4,298,610	4,310,336	4,316,667	4,322,615
4,298,932	4,310,708	4,316,880	4,323,115

Disclaimers

4,060,570.—*Henry N. Paul, III,* Blue Bell, Pa. CURABLE LIQUID POLYSULFIDE POLYMER BASED SEALANTS. Patent dated Nov. 29, 1977. Disclaimer filed Mar. 29, 1982, by the assignee, *Thiokol Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 9, 10, 13, 14, 16 and 17 of said patent.

4,127,875.—*Ronald E. Fernsler; John C. Peer* and *David W. Luz,* Indianapolis, Ind. INRUSH CURRENT START-UP CIRCUIT FOR A TELEVISION RECEIVER. Patent dated Nov. 28, 1978. Disclaimer filed Mar. 5, 1982, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,176,303.—*William E. Babcock,* Warren, N.J., and *Ronald L. Hess,* Zionsville, Ind. TELEVISION S-CORRECTION LINEARITY DEVICE. Patent dated Nov. 27, 1979. Disclaimer filed Mar. 5, 1982, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,212,952.—*Gerald J. Murphy,* Wappingers Falls; and *Bernard Kanner,* West Nyack, N.Y. N,N,N',N'-TETRAMETHYL-αω-POLYMETHYLENEDIAMINES AS CATALYSTS FOR THE PREPARATION OF URETHANE FOAMS. Patent dated July 15, 1980. Disclaimer filed Mar. 31, 1982, by the assignee, *Union Carbide Corp.*

Hereby enters this disclaimer to claims 1 through 11 of said patent.

Dedication

4,264,283.—*Edward N. Gaffney,* West Midlands, England. PUMP FOR LIQUIDS. Patent dated Apr. 28, 1981. Dedication filed Mar. 1, 1982, by the assignee, *Lucas Industries Ltd.*

Hereby dedicates to the Public all claims of said patent.

Examiner Education Program

The U.S. Patent and Trademark Office and Intellectual Property Owners, Inc. are jointly instituting an education program for patent examiners to increase their awareness of industrial technology, particularly in rapidly advancing industrial fields. The program is expected to benefit the patent system and its users by improving the quality of patent examining, resulting, in turn, in the issuance of higher quality patents.

Under the joint program, costing about $350,000 annually, each patent examiner will be given an opportunity to spend up to a week once every three years in visiting commercial and industrial installations which industry makes available for this purpose. The cost of the program will be defrayed by contributions from industry. However, to avoid even the slightest possibility that contributors might influence Patent and Trademark Office decisions in specific applications, the contributors' identities will be kept from patent examiners who visit commercial or industrial facilities, and those who designate examiners for specific trips.

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GERALD J. MOSSINGHOFF,
Apr. 27, 1982. *Commissioner of Patents and Trademarks.*

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 3, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-16-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-26-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-05-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-05-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	5-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-01-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-29-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,176,314 to 3,181,174, inclusive

Plant Patents ..... Numbers 2,490 to 2,501 inclusive

REISSUES

MAY 25, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,940
FLARING TOOL

Leonard J. Kowal, Prospect Heights, and Edward N. Garvey, Schaumburg, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Original No. 4,068,515, dated Jan. 17, 1978, Ser. No. 767,642, Feb. 7, 1977. Application for reissue Jan. 16, 1980, Ser. No. 112,523

Int. Cl.³ B21D *19/16*

U.S. Cl. 72—115 **17 Claims**

16. Pressing structure for providing a controlled buckling of the end of a deformable tube to form a partial double flare therein, comprising

tool means defining holding means for holding the tube end, and a flaring head defining a frustoconical axially inwardly widening flaring surface, a frustoconical axially inwardly narrowing stop surface extending from the radially inner end of the flaring surface, and a pilot portion projecting coaxially inwardly from the radially inner end of the stop surface to be received in the tube end for guiding the stop and flaring surfaces into facial engagement with the tube end to cause said tube end to buckle radially outwardly and cause the distal end of the tube end to abut said stop surface with the axially outer portion of the buckled tube end extending frustoconically substantially normally to said stop surface as an incident of the flaring head being forced coaxially against said tube end.

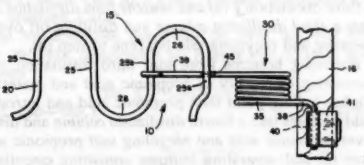
Re. 30,941
SEAT BASE RAIL CONNECTOR AND ASSEMBLY

Lawton H. Crosby, Lake Bluff, Ill., assignor to Morley Furniture Spring Corp., Lake Bluff, Ill.

Original No. 4,157,173, dated Jun. 5, 1979, Ser. No. 865,966, Dec. 30, 1977. Application for reissue Aug. 18, 1980, Ser. No. 178,835

Int. Cl.³ F16F *3/02*

U.S. Cl. 267—110 **4 Claims**



1. In a [furniture] seat base including a frame having afront rail and a back rail and a plurality of sinuous spring band assemblies disposed between said rails, the improvement in a sinuous spring band assembly, comprising:

a. [a normally] *an* arced sinuous spring band comprising a plurality of generally linear wire segments interconnected by a plurality of generally semi-circular wire segments connected to the front rail and extending into close proximity with the back rail, and

b. a rail connector connecting said band to the back rail,

c. said rail connector including coil spring means for storing energy and having a rail attachment leg extending from one end thereof and a spring attachment leg extending from the other end thereof,

d. said coil spring means being effective to resiliently oppose downward movement of said spring attachment leg relative to said rail attachment leg,

e. said rail attachment leg being connected to the back rail with said coil spring means spaced from said back rail whereby the coil spring means will not come into engagement with the rail during vertical travel of the seat spring assembly under load *or, at least, will not come into engagement with the rail until a substantial amount of vertical travel has taken place,*

f. said spring attachment leg being connected to said band.

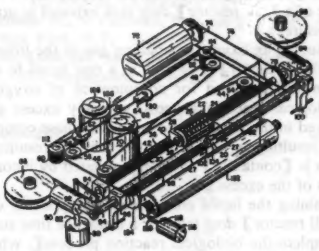
Re. 30,942
PRINTING APPARATUS EMPLOYING BIDIRECTIONAL STEPPING MOTORS TO POSITION TYPE MEMBER

George Takenaka, Santa Ana, Calif., assignor to Tracor, Inc., Austin, Tex.

Original No. 3,374,873, dated Mar. 26, 1968, Ser. No. 345,342, Feb. 17, 1964. Application for reissue Apr. 23, 1979, Ser. No. 32,125

Int. Cl.³ B41J *1/50, 9/04*

U.S. Cl. 400—154.2 **8 Claims**



2. A printer for a plurality of characters, comprising:

a type body having lines defining said characters about the surface thereof;

means for supporting said type body whereby said type body may be variously displaced in plural directions from a quiescent position whereby to present said characters in a printing position;

means for providing plural sets of electrical pulses, each of said sets being indicative of a displacement in one direction to accomplish a desired position for a predetermined character;

a plurality of bidirectional stepping motors, each connected to receive one of said sets of electrical pulses and being mechanically coupled to said type body whereby to displace said type body in one direction;

means for activating said type body to print; and

means for providing return pulses to said stepping motors after said type body is activated to print.

Re. 30,943
STABILIZED MIXTURE

John P. Nicholson, Toledo, Ohio, assignor to Nicholson Realty Ltd., Sylvania, Ohio

Original No. 4,101,332, dated Jul. 18, 1978, Ser. No. 765,837, Feb. 4, 1977. Division of Ser. No. 654,211, Feb. 2, 1976, Pat. No. 4,018,617. Application for reissue Aug. 21, 1979, Ser. No. 68,412

Int. Cl.³ C04B *7/26*

U.S. Cl. 106—85 **8 Claims**

1. A mixture consisting essentially of fly ash and cement kiln dust.

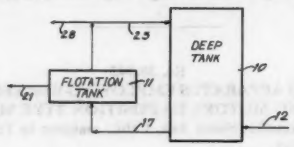
Re. 30,944
CONTINUOUS FERMENTATION PROCESS AND APPARATUS

Melbourne L. Jackson, Moscow, Id., assignor to Research Corporation, New York, N.Y.

Original No. 4,069,149, dated Jan. 17, 1978, Ser. No. 686,297, May 14, 1976. Application for reissue May 30, 1979, Ser. No. 44,114

Int. Cl.[3] C02F *3/02, 1/24*

U.S. Cl. 210—608 6 Claims



1. In a continuous fermentation process involving transfer of gaseous constituents to a liquid material or suspension for biological reaction purposes to produce a cellular material and related metabolic products in suspension, the improvement comprising the following steps:

directing incoming liquid material or suspension to the interior of a [tall reactor] *deep* tank exposed to atmospheric pressure;

introducing an oxygen containing gas to the lower interior of the [reactor] *deep* tank at a rate equal to or greater than that required for consumption of oxygen by the biological reaction process, whereby excess gas is dissolved in the liquid phase and solid phase components of the resulting supension and whereby the resulting suspension is [contantly] *constantly* agitated by incoming bubbles of the excess gas;

maintaining the liquid and gaseous components within the [tall reactor] *deep* tank for a residence time sufficient to complete the biological reaction process[, whereby excess gas is dissolved in the liquid phase and solid phase components of the resulting suspension and whereby the resulting suspension is constantly agitated by incoming bubbles of the excess gas;

maintaining the liquid and gaseous components within the tall reactor tank for a residence time sufficient to complete the biological reaction process];

and removing liquid suspension from the [reactor] *deep* tank at a pressure greater than atmospheric pressure and directing the liquid suspension to a flotation tank exposed to atmospheric pressure, the liquid suspension being suddenly depressurized upon introduction to the flotation tank to thereby cause the dissolved gas to bubble through the liquid suspension and effect separation of the suspended solid materials by flotation.

Re. 30,945
PROCESS FOR THE PREPARATION OF PROPYLENE OXIDE

Günter Prescher; Gerd Schreyer, both of Hanau; Otto Weiberg, Neu-Isenburg; Rolf Wirthwein, Hanau; Helmut Waldmann, Leverkusen; Hermann Seifert, Cologne; Wulf Schwerdtel, Leverkusen, and Wolf Swodenk, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen and Deutsche Gold-und Silver Scheideanstalt Vormals Roessler, Frankfurt, both of, Fed. Rep. of Germany

Original No. 4,113,747, dated Sep. 12, 1978, Ser. No. 678,822, Apr. 28, 1976. Application for reissue Feb. 14, 1980, Ser. No. 121,605

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519298

Int. Cl.[3] C07D *301/14*

U.S. Cl. 549—526 32 Claims

1. Process for the continuous production of propylene oxide from propylene and aqueous hydrogen peroxide which comprises:

(a) contacting aqueous hydrogen peroxide with propionic acid for reaction of hydrogen peroxide and propionic acid to form perpropionic acid, in the presence of a water-soluble acid catalyst for the reaction, the amount of water, catalyst and hydrogen peroxide corresponding to an aqueous solution of catalyst and hydrogen peroxide containing 15 to 45% by weight of catalyst and 25 to 35% by weight of hydrogen peroxide, and the molar ratio of hydrogen peroxide to propionic acid being 0.8 to 1.5 at a temperature of 10° to 70° C.,

(b) extracting the resulting reaction mixture with benzene for formation of a benzene phase rich in perpropionic acid, propionic acid, and containing hydrogen peroxide, and an aqueous raffinate phase rich in hydrogen peroxide and catalyst[.],

(c) treating the aqueous raffinate to remove water therefrom and form a concentrated solution of hydrogen peroxide and catalyst[.],

(d) recycling said concentrated solution of hydrogen peroxide and catalyst to step (a),

(e) extracting the benzene phase of step (b) with water or an aqueous solution for formation of a benzene phase containing perpropionic acid, propionic, acid, water and a reduced amount of hydrogen peroxide, and an aqueous phase containing hydrogen peroxide[.],

(f) subjecting the benzene phase produced in step (e) to azeotropic distillation to reduce the water content thereof to less than 0.5% by weight[.],

(g) contacting the benzene phase of reduced water content of step (f) with propylene at a temperature of 40° to 100° C. and a pressure of 2 to 30 bars for reaction of perpropionic acid of the benzene phase with propylene to form propylene oxide and reaction mixture containing the propylene oxide, and other materials,

(h) distilling the reaction mixture [is] *to* distill overhead propylene, propylene oxide and benzene and removing bottoms comprising benzene and propionic acid;

(i) subjecting the overhead from step (h) to a second distillation to distill off overhead propylene and recycling said propylene to step (g);

(j) introducing the bottoms consisting essentially of propionic acid and benzene from the distillation of step [(i) to a third distillation] *(h) and benzene from distillation step (i) into a third distillation column* and distilling off overhead benzene and recycling said benzene to step (b),

(k) removing bottoms from said third distillation *column* consisting essentially of propionic acid and materials of higher boiling point than propionic acid and introducing said bottoms into a fourth distillation *column* and distilling over propionic acid and recycling said propionic acid to step (a) and separating bottoms consisting essentially of the material of higher boiling point than propionic acid, and

(l) recovering propylene oxide as a side cut from said second distillation.

Re. 30,946
POLYMERIC PENTAERYTHRITYL PHOSPHONATES AND THEIR USE AS FLAME RETARDANTS

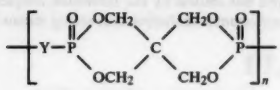
Joseph A. Hoffman, Bridgewater; Christos Savides, Piscataway, and John C. Oppelt, Bridgewater, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Original No. 4,217,267, dated Aug. 12, 1980, Ser. No. 900,828, Apr. 28, 1978. Application for reissue Dec. 12, 1980, Ser. No. 215,772

Int. Cl.[3] C08K *5/53*

U.S. Cl. 524—120 11 Claims

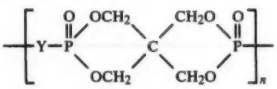
1. A flame retardant composition comprising a polyolefin polymer having about 2 to 4 carbon atoms and an effective flame retardant amount of a mixture of a polymeric pentaerythrityl phosphonate represented by the formula:



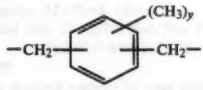
wherein Y is selected from (a) $-(CH_2)-_x$ or

and wherein n is at least 2; x is an integer from 1 to 8; and y is 0 to 4, and ammonium polyphosphate.

6. A flame retardant composition comprising a polyolefin polymer having about 2 to 4 carbon atoms and an effective flame retardant amount of a polymeric pentaerythrityl phosphonate represented by the formula:



wherein Y is selected from (a) $-(CH_2)-_x$ *or*



and wherein n is at least 2; x is an integer from 1 to 8; and y is 0 to 4.

Re. 30,947

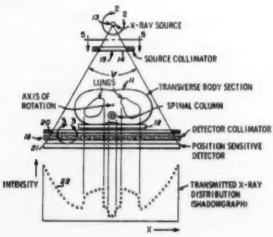
METHOD AND APPARATUS FOR X-RAY OR γ-RAY 3-D TOMOGRAPHY USING A FAN BEAM

Douglas P. Boyd, Palo Alto, Calif., assignor to Stanford University, Stanford, Calif.

Original No. 3,983,398, dated Sep. 28, 1976, Ser. No. 528,024, Nov. 29, 1974. Application for reissue Feb. 5, 1980, Ser. No. 118,686

Int. Cl.³ G01N *21/34*

U.S. Cl. 250—445 T **12 Claims**



4. [The method of claim **1** wherein the step of detecting the penetrating radiation to derive sets of angularly spaced shadowgraphic data comprises] *In a method of penetrating ray 3-D tomography the steps of:*

directing a divergent beam of penetrating radiation through a body to be examined from a source on one side of the body to a detector on the other side of the body;

effecting relative angular displacement between the divergent beam of penetrating radiation and the body;

detecting the penetrating radiation that has passed through the body at a number of angularly spaced positions within the angle subtended by the divergent beam to derive sets of detected radiation data representative of a plurality of angularly spaced shadowgrams of absorption or transmission of the penetrating radiation by the body, each of said shadowgrams representing the transmission of the penetrating radiation through the body along an array of divergent paths subtended by the divergent beam, and different ones of said sets of angularly spaced shadowgraphic data corresponding to different sets of intersecting rays of penetrating radiation, said step comprising detecting radiation passing through the body at a number of angularly spaced positions within the angle subtended by the divergent beam, such angular spacing within the divergent beam being smaller in angular spacing than the angular spacing between adjacent shadowgrams[.]*; and reordering the sets of data corresponding to absorption or transmission shadowgraphic data of divergent rays of said penetrating radiation into sets of data corresponding to absorption or transmission shadowgrams of parallel rays of said penetrating radiation.*

Re. 30,948

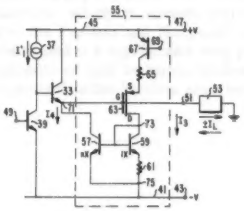
DYNAMIC CURRENT SUPPLY

Otto H. Schade, Jr., N. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Original No. 4,004,244, dated Jan. 18, 1977, Ser. No. 581,045, May 27, 1975. Application for reissue Jun. 3, 1980, Ser. No. 155,997

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—288 **20 Claims**



1. In combination:

a power terminal for receiving an operating voltage;

a reference terminal for receiving a reference voltage;

an input terminal;

an output terminal;

an output transistor having a collector electrode connected to said power terminal, a base electrode coupled to said input terminal, and an emitter electrode connected to said output terminal;

a controlled-current-supply transistor having a principal conduction path between a first electrode thereof and a second electrode thereof, the conductivity of said path being directly related to the potential between said first electrode and a third electrode of said controlled-current-supply transistor, the first and second electrodes of said controlled-current-supply transistor being connected respectively to said reference terminal and to said output terminal; and *in addition to the foregoing elements,*

means, *connected to the emitter electrode of said output transistor,* for sensing the potential [appearing] at said output terminal *with respect to one of said operating and reference voltages* to generate a control signal applied between the first and third electrodes of said controlled-current-supply transistor to increase its conduction as the potential between said reference terminal and said output terminal decreases in value.

Re. 30,949

DIGITAL FREQUENCY DISPLAY DEVICE

Tadao Sekiguchi, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Original No. 4,114,101, dated Sep. 12, 1978, Ser. No. 767,832, Feb. 11, 1977. Application for reissue Feb. 8, 1980, Ser. No. 119,664

Claims priority, application Japan, Feb. 14, 1976, 51/15117; Mar. 18, 1976, 51/29604; Mar. 18, 1976, 51/29605; Mar. 18, 1976, 51/32659[U]

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—158 9 Claims

1. A digital frequency display device for displaying digits representative of the operating frequency of a communication apparatus comprising:

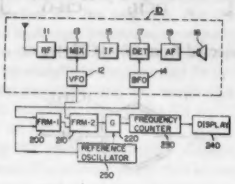
a reference frequency oscillator;

a first frequency mixer for mixing the output frequencies of a first oscillator of the communication apparatus and of said reference frequency oscillator;

a second frequency mixer for mixing the output frequency of a second oscillator of the communication apparatus and the output frequency from said first frequency mixer to produce a frequency corresponding to the frequency to be displayed but shifted by the reference frequency;

a frequency counter including correcting means for eliminating said shifted frequency component for counting the output frequency from said second frequency mixer; and

display means connected to said frequency counter for displaying digits representative of the operating frequency.



PLANT PATENTS

GRANTED MAY 25, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,849

ROSE PLANT

Betty J. Jolly, Gregg Neck Rd., Box 406, Galena, Md. 21635

Filed Nov. 24, 1980, Ser. No. 209,701
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by pink blooms showing darker pink edges borne until reflexing and lightening and with flowers of different pink tonality visible at the same time.

4,850

ROSE PLANT 71-12673

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 23, 1980, Ser. No. 190,091
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous growth, abundant blooms, cerise red flower color and very slight fragrance.

4,851

ROSE PLANT 75-3831

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 23, 1980, Ser. No. 190,092
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of light colored new growth, mildew resistant foliage, red flowers with 20 to 25 petals and very little fragrance, particularly suitable for the production of cut blooms in greenhouses.

4,852

ALMOND TREE

Theodore J. Moschitto, 4515 W. Elliot Ave., Merced, Calif. 95340

Filed Nov. 24, 1980, Ser. No. 209,992
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, which is upright and sturdy in growth, blooms after the Peerless and Nonpareil, the bloom being heavy and white, and is a regular and very productive bearer of large, light-colored nuts in harvest mid-season; the nuts having a shell thinner than the Peerless, and a sweet kernel of better flavor.

PLANT PATENTS

GRANTED MAY 28, 1929

PATENTS

GRANTED MAY 25, 1982

ERRATA

For CLASS	See PATENT NO.
441–022	4,330,895
029–611	4,330,908
029–076	4,331,003
464–069	4,331,004
464–145	4,331,005
464–018	4,331,006
423–428	4,331,475
430–147	4,331,479
376–287	4,331,512
524–238	4,331,572
524–199	4,331,573
525–530	4,331,574
106–264	4,331,575
524–271	4,331,576
524–819	4,331,577
524–791	4,331,578
524–005	4,331,579
523–176	4,331,580
524–364	4,331,581
523–453	4,331,582
523–144	4,331,583
524–206	4,331,584
524–103	4,331,585
525–186	4,331,586
524–181	4,331,587
524–439	4,331,588
548–472	4,331,600
548–461	4,331,601
549–337	4,331,602
549–228	4,331,603
549–230	4,331,604
549–314	4,331,605
549–402	4,331,606
523–324	4,331,787
424–180	4,331,804
373–139	4,331,827
373–153	4,331,828
340–598	4,331,888
372–002	4,331,936
372–074	4,331,937
372–050	4,331,938
372–092	4,331,939

PATENTS

GRANTED MAY 25, 1982

ERRATA

Int. Cl.[3]	Patent No.
441-022	4,331,895
029-611	4,330,903
029-074	4,331,870
464-009	4,331,804
464-193	4,331,802
464-018	4,331,804
423-458	4,331,473
430-447	4,331,877
370-281	4,331,312
324-239	4,331,973
324-199	4,331,973
325-310	4,331,974
106-264	4,331,775
328-271	4,331,370
324-819	4,331,977
324-701	4,331,970
324-1063	4,331,979
323-179	4,331,380
324-764	4,331,971
324-471	4,331,983
327-144	4,331,933
324-206	4,331,984
324-103	4,331,983
327-179	4,331,386
324-121	4,331,787
324-439	4,331,334
348-472	4,331,889
348-461	4,331,801
340-327	4,331,802
340-228	4,331,803
340-230	4,331,804
340-314	4,331,804
340-407	4,331,806
331-324	4,331,787
434-180	4,331,804
173-139	4,331,827
173-133	4,331,328
340-366	4,331,868
372-002	4,331,956
372-074	4,331,977
372-097	4,331,978
372-092	4,331,939

PATENTS

GRANTED MAY 25, 1982

GENERAL AND MECHANICAL

4,330,887

TERRY CLOTH GLOVES (TERRY GRIPPERS)

Joanne White, 1702 E. 33rd St., Brooklyn, N.Y. 11234

Filed Jul. 25, 1980, Ser. No. 172,204

Int. Cl.³ A41B *13/08*; A47K *3/22*

U.S. Cl. 2—16 **1 Claim**

1. A glove, comprising in combination, a long sleeved glove member made from a terry cloth material; said glove additionally including a separate band member for said glove member, said band member having loop pile fasteners on one of it's sides, said band member being removably applied around an end edge of said glove member when fitted on a wearer's arm; said glove member being of a length so as to extend from the finger tips of a hand, across the length of a lower arm, across an elbow and upon an upper arm of said wearer; said glove member being performed with a right angle at said elbow, and said glove member end edge being around an opening for entry of said arm into said glove member, said end edge being scalloped in shape wherein scallope of said end edges include loop pile fasteners of said band member.

4,330,888

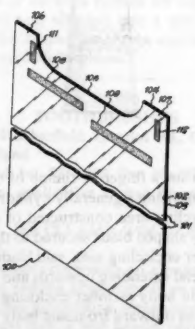
DISPOSABLE PROTECTIVE GARMENT

Harlan A. Klepfer, 16 Meadowstream Ct., Snyder, N.Y. 14226

Continuation-in-part of Ser. No. 127,583, Mar. 6, 1980, Pat. No. 4,306,316, which is a continuation-in-part of Ser. No. 103,486, Dec. 14, 1979, Pat. No. 4,288,877. This application Dec. 1, 1980, Ser. No. 211,899

Int. Cl.³ A41B *27/12*

U.S. Cl. 2—48 **21 Claims**



1. A protective garment in the form of a bib, napkin or apron comprising a body of flexible sheet material having an upper edge portion and opposite side edge portions,

pressure sensitive adhesive carried by said garment and capable of releasably adhering to the clothing or body of a user,

said garment having a fold line substantially parallel to and spaced from each of said opposite side edges and having the two portions thereof defined by said fold line in substantially overlying relationship,

said adhesive releasably securing the adhesive-carrying portion of said garment in folded relation and with all of said adhesive covered by said folded garment,

said adhesive arranged on said garment in discontinuous areas offset relative to each other whereby said areas of adhesive are out of contact with one another when said garment is folded upon itself,

said garment having substantial areas without adhesive to facilitate unfolding said garment and thereby exposing said adhesive for placement against the clothing or body of a user.

4,330,889

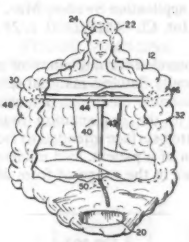
SLEEPING AND MEDITATION BAG

John Driscoll, 358-Seventh Ave., Brooklyn, N.Y. 11215

Filed Jan. 21, 1980, Ser. No. 113,535

Int. Cl.³ A47G *9/00*

U.S. Cl. 2—69.5 **9 Claims**



1. A sleeping and meditation bag for use in sleeping and meditation having a first position to accomodate the user in a sitting, cross-legged posture and in a second position to accomodate the user in a reclining posture comprising:

a first portion to accomodate the shoulders and extended elbows of the user and to accomodate a meditation support stick in the first position;

a second portion to accomodate the trunk of the user being joined to said first portion and being substantially coincident with the greatest width of the first portion, and

a third portion having one end adjacent said second portion and being substantially the same width as said second portion to accomodate the extended knees of the user in the first position and being tapered toward and adjoined to an end surface of the bag to enclose the feet of a user in the second position and further comprising pad means inside the bag to accomodate said user or stick.

4,330,890

GARMENT IN PARTICULAR A BODICE OR SWIMSUIT

Georg E. H. Weber-Unger, Am Brand 2, Nubdorf/Inn, Fed. Rep. of Germany (8201)

Filed Feb. 21, 1980, Ser. No. 123,478

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1979, 2907681; Apr. 12, 1979, 2915702

Int. Cl.³ A41F *19/00*

U.S. Cl. 2—336 **14 Claims**

1. In a garment, in particular a bodice or swimsuit, in which at least one part of the cloth of the garment is joined via an eyelet, particularly an adjuster slide having at least one longitudinal slot, to a tape or band, in particular a tape or band of a

strap, at least one portion of the eyelet being sewn in each case into a loop of the part of the cloth, or the tape, or the band, the improvement comprising:

at least one fixing tab (7; 11; 13; 26) joined to said at least one portion (5; 14; 25) of said eyelet, said fixing tab being sewn into said loop and forming an anchorage preventing tilting or oblique positioning of said eyelet relative to said loop.

4,330,891

ELEMENT FOR IMPLANTATION IN BODY TISSUE, PARTICULARLY BONE TISSUE

Per I. Brånemark, S-431 39, Mölndal, and Bo Thuresson af Ekenstam, S-412 53, Göteborg, both of Sweden

Filed Feb. 28, 1980, Ser. No. 125,654

Claims priority, application Sweden, Mar. 7, 1979, 7902035

Int. Cl.³ A61F *1/00, 1/24*

U.S. Cl. 3—1 **9 Claims**

1. An element intended for implantation in bone tissue consisting of a biologically flawless material selected to avoid the occurrence of unsuitable electrical potential differences and galvanic currents in the implantation region, said element having a, micro-pitted surface intended to face the tissue in the implantation region of a patient, said micro-pitted surface has pits with a diameter in the range of from about 10 nm up to about 1000 nm.

4,330,892

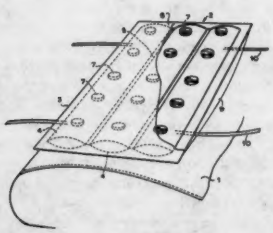
MATTRESS AND BEDCLOTHES, OR PILLOW

Kyuji Fukushima, Seki, Japan, assignor to Kabushiki Kaisha Hatsuyume Wata Sohonpo, Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,016

Int. Cl.³ A47G *9/00*; A47C *21/04*

U.S. Cl. 5—437 **4 Claims**



1. A head-cooling pillow for providing a sound sleep and good health to a sleeper comprising:

(a) a pillow body;

(b) a pillow pad including means to detachably mount it to said pillow body;

(c) said pillow pad including a plurality of parallel envelopes removably contained by an upper and lower cover means;

(d) a plurality of permanent magnets arranged in spaced relationship on the upper surface of each of said envelopes; and

(e) a heat-absorptive material disposed in each of said envelopes;

(f) said heat-absorptive material filling each envelope, whereby said envelopes may easily transform in right and left as well as top and bottom directions.

4,330,893

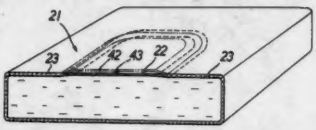
WATER BED

Ichinosuke Matsui, No. 14-11, Shimoochiai 2-chome, Shinjuku-ku, Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,444

Int. Cl.³ A47C *27/08*; A47G *9/00*

U.S. Cl. 5—451 **2 Claims**



1. A water bed comprising a mattress in the form of a watertight bag having at least the top side thereof formed of a flexible sheet material, said top side being composed of a flexible center portion sufficient to be occupied by a sleeper so as to facilitate supporting every part of the sleeper's body uniformly and a less flexible peripheral portion formed by providing means for restricting swelling deformation of the peripheral portion to prevent oppression against the sleeper caused by the swelling of the peripheral portion adjacent the sleeper's body due to the weight of the sleeper on said flexible portion, said restricting means being constituted by an increased thickness in said peripheral portion as compared with the center portion of said top sheet of said bag.

4,330,894

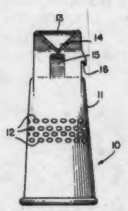
METHOD OF OPENING METAL BEVERAGE CONTAINERS

Robert K. Hayden, P.O. Box 488, La Plata, Md. 20645

Filed Jan. 7, 1980, Ser. No. 109,869

Int. Cl.³ B25F *1/00*

U.S. Cl. 7—152 **2 Claims**



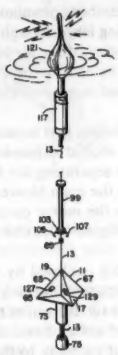
1. An attachment for a finger or thumb of the user thereof, said attachment comprising a generally cylindrical and tapered body member encircling area constructed of a relatively soft metal, a triangularly shaped blade secured to the upper portion of said body member encircling area, said blade constructed of a relatively hard metal extending upwards and outwards of the upper portion of said body member enclosing area and terminating downward and outward from said body member enclosing area a spur secured to the underside of said blade and extending in parallel relationship with said blade, a sharpened projection secured to one side of said blade and extending outwardly therefrom, an opening formed at the lower portion of said member enclosing area with means extending therethrough whereby said attachment may be suspended from the body of the user of the attachment when the same is not fitted over the finger or thumb of the user thereof.

4,330,895

STABILIZER FOR REDUCING MOTION OF AN OBJECT DISPOSED IN A FLUID

Stephen Putman, and Frederick L. Erickson, both of Fort Wayne, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,761
Int. Cl.³ B63B 21/52
U.S. Cl. 441—22 23 Claims



10. Hydrophone suspension system for automatic deployment in water, comprising:

a casing weighted at one end;

a float deployable to the surface of the water from other end of said casing upon immersion;

a hollow mandrel coaxially positioned in said casing adjacent to said float and slidably disposable from said other end of said casing;

a first segment of a line wound around said mandrel for payout of said mandrel below said float, and connected at its ends between said float and one end of said mandrel;

a hydrophone positioned in said casing at said one end thereof, and deployable from said other end thereof;

a second segment of said line stored within said mandrel connected between said one end of said mandrel and said hydrophone; and

damper means stored in a collapsed mode within said mandrel, and operatively connected to said second segment intermediate of the ends thereof for deployment from the lower end of said mandrel into a spreading mode in response to the suspension force applied to said second segment by said hydrophone.

4,330,896

TOOTHBRUSHES

Peter A. Booth, Furtherfield, Chenies Rd., Chorleywood, Hertfordshire, England

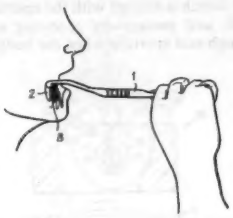
Filed Jul. 25, 1980, Ser. No. 172,432
Claims priority, application United Kingdom, Jul. 25, 1979, 7925979
Int. Cl.³ A46B 9/04, 9/08
U.S. Cl. 15—172 10 Claims

1. In a toothbrush comprising an elongated handle part, a head part having bristles projecting from at least one side of said head part, and articulating means connecting said head part to an adjacent end of said handle part for adjustment of said head part about a pivot axis which extends transversely to a plane containing the axis of the handle part and substantially perpendicularly to the bristles into a selected one of a multiplicity of cranked positions in which said bristles generally face towards said handle part, the improvement which facilitates adjustment of said head part into a selected cranked position whilst permitting control of brushing pressure and which is characterised in that said articulating means includes

(i) a pair of projections integral with one of said parts and journalled in cooperating sockets in the other said part, and

(ii) resisting means located between said head and handle parts for resisting relative turning movement thereof

(iii) said resisting means being adapted to retain said head



part set in a selected cranked position without being locked in said position, and

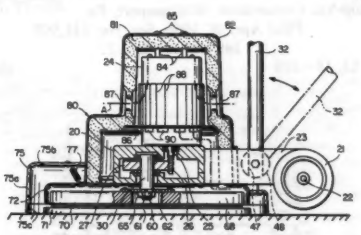
(iv) said resisting means being adapted to permit said head part to turn from said selected cranked position in response to an excessive brushing pressure, as predetermined by said resisting means, to relieve said brushing pressure.

4,330,897

FLOOR MACHINE

Jeffrey R. Tucker, Newark; Dennis W. Ross, San Leandro, and Hartwell F. Tucker, Los Altos, all of Calif., assignors to Octa, Inc., Mountain View, Calif.

Filed Mar. 13, 1980, Ser. No. 129,902
Int. Cl.³ A47L 11/40
U.S. Cl. 15—246 8 Claims



1. In a floor machine having a power driven rotary unit, the improvement which comprises an annular splash guard surrounding said unit, and means connected between said unit and said annular splash guard in a manner to impart radially-inward forces on said splash guard for urging said guard to a centered position relative to the axis of said rotary unit.

4,330,898

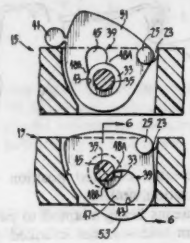
ATTACHMENT MEANS

Robert L. Thompson, Doncaster, and Douglas E. Scotcher, Elwood, both of Australia, assignors to Nu-View Pty. Ltd., Fitzroy, Australia

Filed Dec. 3, 1980, Ser. No. 212,437
Claims priority, application Australia, Dec. 5, 1979, PE1618
Int. Cl.³ B60S 1/40
U.S. Cl. 15—250.32 12 Claims

1. A windscreen wiper blade, and a coupling element for attaching the wiper blade to a wiper arm which has a coupling pin extending laterally therefrom, the coupling pin having at least one latching element, said wiper blade having a pair of opposed side walls defining a channel and an aperture in at least one side wall receiving therethrough the coupling pin, the aperture being encompassed within the at least one side wall

and having a size substantially equal to the exterior circumference of the coupling pin received therethrough, said coupling element including a body proportioned to be received in said channel between said side walls, hinge means cooperating with associated hinge means on the wiper blade for enabling the body to be pivoted relative to the wiper blade, said body having a passageway encompassed therein and extending therethrough which is aligned with the aperture in said at least one side wall, said passageway receiving said coupling pin inserted through said aperture when the body is in a first pivot



position and the passageway being shaped so that the body is pivotable to a second pivot position whereat said latching element of said coupling pin cooperates with said body to secure the coupling pin within the body.

4,330,899

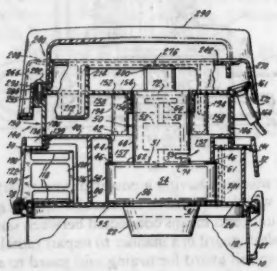
NOISE REDUCING BLOWER MOTOR HOUSING MEANS FOR VACUUM CLEANER, OR THE LIKE

Jonathan Miller; Richard Fegan, both of Williamsport; Robert C. Berfield, Jersey Shore; Kenneth R. Hiester, Cogan Station, and Rudolph W. Wacek, Montoursville, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Apr. 18, 1980, Ser. No. 141,567

Int. Cl.³ A47L 9/22

U.S. Cl. 15—326 **28 Claims**



1. A blower motor and housing assembly for use at the air inlet to a vacuum cleaner, or the like, said assembly comprising:

a bypass type blower motor, including a motor casing; a drive motor in the casing; a main blower fan connected with the drive motor for being driven thereby; the main blower fan having an inlet side for transmission of air to the main blower fan and having an outlet side for air exhausted by the main blower fan;

the casing having a cooling air inlet at one side of the motor and having a cooling air outlet at the other side of the motor; a motor cooling air fan connected with the drive motor for blowing cooling air in the casing across the motor from the cooling air inlet through the cooling air outlet; casing separating means for separating the cooling air flow in the casing between the cooling air inlet and the cooling air outlet from the air flow transmitted past the main blower fan;

housing means for containing the blower motor and the casing thereof; the housing means having an inlet which communicates with the inlet side of the main blower fan; the housing means including a first expansion chamber communicating with the outlet side of the main blower fan and being large enough for and being shaped for slowing the velocity of the air blown into the first expansion chamber by the main blower fan; a first outlet from the first expansion chamber out of the housing means;

a second expansion chamber communicating with the cooling air outlet and being large enough for and being shaped for slowing the velocity of the air blown into the second expansion chamber by the motor cooling fan; a second outlet from the second expansion chamber and out of the housing means;

the housing means including first separating means for separating the first and second expansion chambers; second separating means for separating the first expansion chamber from the inlet to the main blower fan; and third separating means outside the motor casing for separating the air flow to the cooling air inlet and from the cooling air outlet;

said housing means being enclosed by an external wall; the first outlet comprising a wall opening through the housing means external wall; a tubular outlet fitting projecting into the first expansion chamber from the wall opening for defining a tubular exit pathway to the wall opening from the first expansion chamber; and

a cuff of air flow velocity damping and noise and vibration damping material at and defining the tubular outlet fitting.

4,330,900

VACUUM CLEANER WITH FILLING-CONDITION INDICATOR

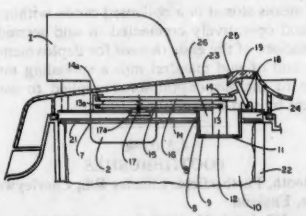
Manfred Dörr, Bochum; Georg Haase, Radevormwald, and Paul-Ulrich Uibel, Ennepetal, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,634

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 2922857

Int. Cl.³ A47L 9/19

U.S. Cl. 15—339 **12 Claims**



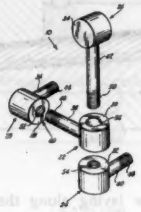
1. In a vacuum cleaner, a combination comprising a housing having a suction chamber and a bag-admitting opening; a filter bag supporting plate mounted in said housing inwardly of said bag-admitting opening and having two openings communicating with the interior of a supported filter bag in which pressure increases as the bag is filled with dust; a cover on said housing movable between an open and a closed position in which it respectively exposes and closes said bag-admitting opening, said cover having a suction-nipple entering in one of said openings and a connecting nipple entering into another of said openings and communicating with said suction chamber when said cover moves into said closed position; and bag-filling condition indicator means including a member in said connecting nipple operative in response to pressure differentials between said suction chamber and the interior of said bag.

4,330,901

ADJUSTABLE HINGE

Forest E. Sanders, 210 Pershing St., Green City, Mo. 63545

Filed Jul. 17, 1980, Ser. No. 169,890
Int. Cl.³ E05D 7/04
U.S. Cl. 16—237 6 Claims



1. A hinge for securing a swingable member such as a door or window to a fixed member such as a wall or casing, comprising:

a first pin attached to said swingable member,

a second pin attached to said fixed member,

a third pin attached to said first pin,

said second and third pins each having an enlarged head disposed in vertical alignment defining an uppermost head and a lowermost head,

said uppermost head provided with a through smooth bore,

a fourth pin journalled through said smooth bore and secured to said lowermost head, and

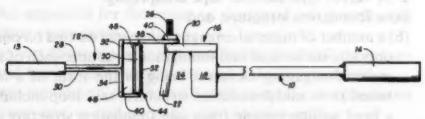
said smooth bore being oversized relative to said fourth pin.

4,330,902

DEVICE FOR BREAKING THE FORETOES OF SHEEP CARCASSES

Daniel D. Gilster, R.R. 2, and Randall T. Kaupan, 519 Pleasant, both of Albert Lea, Minn. 56007

Filed Dec. 22, 1980, Ser. No. 218,471
Int. Cl.³ A22B 3/10
U.S. Cl. 17—1 R 10 Claims



1. A device for breaking the first joints of the forelegs of animal carcasses comprising:

a first elongated handle;

a slotted, leg-receiving subassembly carried on one end of said first handle;

a second elongated handle having an end pivotally connected to said one end of said first handle; and

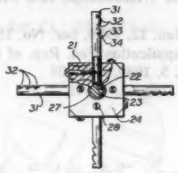
a knife blade secured to, and movable with, said second handle and extending substantially transversely to the longitudinal axis of the handle at a location spaced along the second handle from the point of pivotal connection of the handles to each other whereby when said handles are pivoted relative to each other about the pivotal axis at said point of pivotal connection, said knife blade is moved against, and cuts, tendons in a foreleg simultaneously engaged by said leg-receiving subassembly, and said handles may thereafter be moved to apply joint breaking leverage to the first joint of said engaged foreleg.

4,330,903

FEATHER PLUCKING MACHINE

Ronald T. Vilotti, 535 Corbitt Dr., Burlingame, Calif. 94010

Filed Dec. 15, 1980, Ser. No. 216,518
Int. Cl.³ A22C 21/02
U.S. Cl. 17—11.1 R 7 Claims



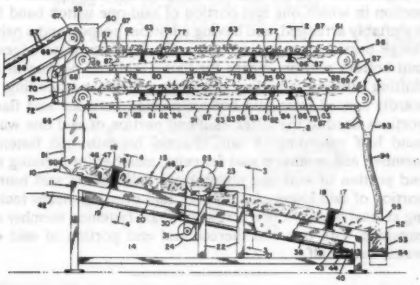
1. A feather plucking machine comprising a base, a shaft first means rotatively mounting said shaft on said base, drive means for said shaft, a square block, second means fixing said block for rotation with said shaft, a plurality of fingers, each said finger formed of a piece of tubing with notches cut into said tubing adjacent a first end thereof, holes formed spaced apart longitudinally of each face of said square block, the second ends of said tubing received in said holes, and third means fixing said fingers in said holes.

4,330,904

APPARATUS FOR SHUCKING SCALLOPS

William R. Lambert, 750 Scallop Dr., Port Canaveral, Fla. 32920

Division of Ser. No. 39,767, May 17, 1979, Pat. No. 4,255,834.
This application Aug. 4, 1980, Ser. No. 175,295
Int. Cl.³ A22C 29/04
U.S. Cl. 17—74 7 Claims



1. Apparatus for shucking scallops and separating scallop meats from scallop shells comprising; a base supporting frame, a housing and scallop conveying means mounted on said frame, said housing and scallop conveying means having a scallop-receiving inlet and a shell-discharging outlet, means for moving said scallops while traveling along a directed path of travel between said inlet and said outlet in said housing and scallop conveying means to expose a substantial area of the scallops, means for supplying heated fluid into said housing and scallop conveying means to elevate the temperature therein to heat a substantial area of the moving scallops as they travel in said directed path of travel on said scallop conveying means, and means in said housing and scallop conveying means for removing scallop meats released from scallop shells out of the directed path of scallop travel and away from said elevated temperature before the shell discharging outlet in the heated directed path of travel and from out of engagement with heated scallop shells for discharge in one direction while retaining scallop shells for discharge through said shell-discharg-

ing outlet in another direction from the direction of said released scallop meats.

4,330,905

ADJUSTABLE DEPLOYMENT BAND

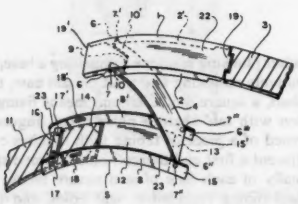
Herchenbach Wolfgang, Pforzheim, Fed. Rep. of Germany, assignor to Rodi & Wienenberger AG, Pforzheim, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,777

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925442; Apr. 5, 1980, 3013404

Int. Cl.[3] A44B *21/00*

U.S. Cl. 24—71 J 14 Claims



1. An adjustable deployment band, comprising two watch band halves; and a foldable closure member having a lower closure part to which one of said watch band halves is adjustably connected, an upper closure part to which one end of the other watch band half is connected, and a folding part connecting said upper and said lower closure parts for movement between a closed position in which said closure parts interengage superimposed with each other and an open position, said end of said other watch band half extending laterally of said folding part in said closed position, said lower closure part being formed as a channel of a substantially rectangular cross-section in which one end portion of said one watch band half is shiftably arranged, and having a bottom portion and a pair of flange portions projecting upwardly from opposite edges of said bottom portion; means for fixing said end portion in any shifting position including a fastening member extending upwardly spaced from said bottom portion between said flange portions fixed to the latter, said end portion of said one watch band half extending in said channel beneath said fastening member; and means on said fastening member for pressing said end portion of said one watch band half against said bottom portion of said lower closure part, said pressing means including at least one set screw screwed in said fastening member and engaging with one end thereof said end portion of said one watch band half.

4,330,906

FEED-THRU CONNECTION

Walter M. Werner, Downingtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 10, 1980, Ser. No. 128,994

Int. Cl.[3] F16G *11/00*

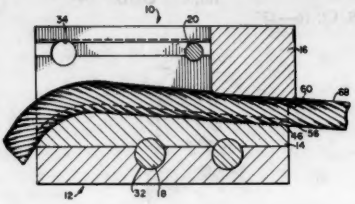
U.S. Cl. 24—136 R 3 Claims

1. A device to connect a cable to a transmission tower or the like, comprising:

a. an elongated U-shaped body having a semi-rounded floor and parallel sidewalls with longitudinally extending slots located in the interior surface of the sidewalls and opening out at one end of the body;

b. an insert member positioned in the floor of the body and having a longitudinally curved, upwardly facing surface with a cable-receiving channel extending along the length thereof; and

c. a wedge member with laterally projecting rails on each side and a tapered, channel shaped lower surface, said wedge member being adapted to be positioned at one end of the body member with the rails slidably received in the slots and the tapered lower surface facing the insert member and to be forcefully driven into the body so that a



cable which may be laying along the cable-receiving channel will be immovably trapped between the wedge member and insert member.

4,330,907

VELVET TYPE FASTENER TAPE AND METHOD OF PRODUCING THE SAME

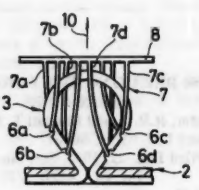
Koichi Ochiai, Tokyo, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,672

Claims priority, application Japan, Apr. 5, 1979, 54-41472

Int. Cl.[3] A44B *17/00;* D03D *27/00*

U.S. Cl. 24—204 7 Claims



1. A velvet type fastener tape comprising:

(a) a foundation structure; and

(b) a number of material-engaging elements carried on one of opposite surfaces of said foundation structure, each of said material-engaging elements being in the form of a loop raised from said foundation structure, said loop including a head section remote from said foundation structure and a pair of leg sections diverging outwardly of said foundation structure, each of said leg sections having on its outer side at least one material-hooking groove.

4,330,908

HAIRPIN-TYPE ELECTRIC RESISTANCE HEATING ELEMENT MAKING

Albert B. Best, Danbury, Conn., assignor to The Kanthal Corporation, Bethel, Conn.

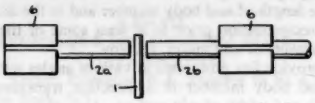
Division of Ser. No. 66,683, Aug. 15, 1979, Pat. No. 4,266,119. This application Nov. 13, 1980, Ser. No. 206,646

Int. Cl.[3] H05B *3/00*

U.S. Cl. 29—611 2 Claims

1. A method for providing a refractory metal silicide resistance wire end with a refractory metal silicide terminal wire of larger diameter, said method comprising sandwiching the

resistance wire end transversely between the ends of two pieces of said terminal wire with the resistance wire transversely positioned with respect to the terminal wires, and butt welding the two terminal ends together.



4,330,909

APPARATUS FOR FLATTENING AND GUIDING AN ELONGATED WEB

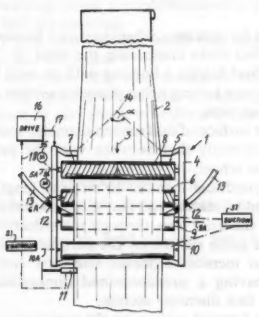
Jürgen Peschke, Meitingen; Franz Mair, Augsburg, and Ludwig Zerle, Mering, all of Fed. Rep. of Germany, assignors to Erhardt & Leimer KG, Augsburg, Fed. Rep. of Germany

Filed Jul. 15, 1980, Ser. No. 169,144

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928641

Int. Cl.³ D06C 3/06

U.S. Cl. 26—75 14 Claims



1. An apparatus for flattening an elongated textile web, said apparatus comprising:

a support frame extending generally longitudinally in a plane and having an upstream end and a downstream end;

means supporting said frame for pivoting about a pivot axis transverse to said plane at said upstream end;

a pair of transversely extending and longitudinally spaced spreader rollers on said frame adjacent said upstream end and each having a pair of screwthread formations of opposite hand;

a pair of transversely extending and longitudinally spaced guide rollers on said frame between said spreader rollers and said downstream end;

feed means for passing said textile web sinusoidally over said rollers from said upstream end to said downstream end at a transport speed;

means connected to said spreader rollers for rotating same relative to said web at a peripheral speed greater than said transport speed and thereby flattening said web on said spreader rollers; and

automatic control means for detecting the position of said web and for automatically angularly displacing said frame about said pivot axis to align said web with a predetermined edge position when said web deviates therefrom.

4,330,910

DEVICE AND METHOD FOR SMOOTHENING SURFACES OF DISKS FOR DISK MEMORIES

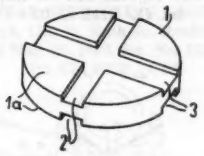
Rudolf Schachl, Taufkirchen, and Hans-Heinrich Gatzen, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,923

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937276

Int. Cl.³ B21C 37/30

U.S. Cl. 29—90 R 8 Claims



1. A device for smoothening (burnishing) operative surfaces of disks for disk memories such as magnetic disks for magnetic disk memories, comprising:

a circular-cylindrical-shaped body having opposed planar base surfaces; and

at least one sharp-edged groove positioned on at least one of said planar base surfaces.

4,330,911

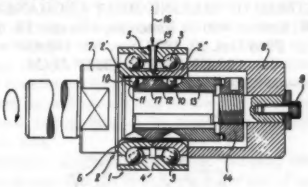
PROCESS FOR PRODUCTION OF AN OBJECT CONSISTING OF AT LEAST TWO PARTS MOVABLE RELATIVE TO EACH OTHER, ONE OF WHICH IS SUBSTANTIALLY ENCLOSED WITHIN THE OTHER

Hendrikus J. Kapaan, Nieuwegein, and Martin B. Verburgh, Amersfoort, both of Netherlands, assignors to SKF Industrial Trading & Development Co. B.V., Netherlands

Filed Nov. 29, 1979, Ser. No. 98,535

Int. Cl.³ B21H 1/12; B23K 9/12

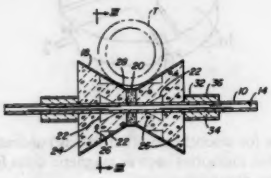
U.S. Cl. 29—148.4 A 7 Claims



1. Process for production of an object consisting of at least two parts movable relative to each other, one of which parts or a portion thereof is substantially enclosed within the other, one of the parts being made in at least two separate pieces, these pieces being placed against each other and held in the correct position in relation to the other part, a high energy beam welding means such as a laser or electron beam being set up over the parting line between the two pieces and put in operation, while at least the two pieces are moved bodily in order to move the parting line along past the energy beam and weld the two pieces together, characterized in that between the two parts of the object, one or more loose members are enclosed, which members are introduced at the time of placing against each other of the two pieces of the one part in the correct position in relation to the other part, and then the two pieces of the said one part are welded together, said parts being annular and said one part made in at least two pieces wherein a parting line lies in a plane perpendicular to the axis of revolution of said one part and the other part being provided with an opening extending radially therethrough and facing said parting line in assem-

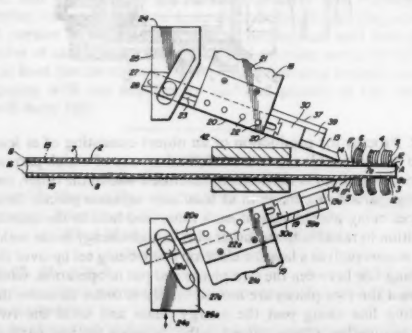
bled condition, said high energy welding means being set up over the outer end of said opening so that the energy beam is directed to said parting line through said opening and the two pieces of said one part are set in rotation bodily while the other part is held stationary.

4,330,912
FURNACE ROLL
Velvin E. Harris, Carrollton, Ga., assignor to Crucible Inc., Pittsburgh, Pa.
Filed Jun. 18, 1980, Ser. No. 160,414
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—130 **12 Claims**



1. A furnace roll especially adapted for supporting pipe or tubing during travel through an annealing furnace, said roll comprising a shaft having a refractory roll body concentrically mounted thereon, said roll body having a metal surface portion in surface contact with said pipe or tubing and means for maintaining said shaft at a temperature cooler than the temperature of said annealing furnace, said metal surface portion and said roll shaft having no metal-to-metal contact therebetween and a reinforcing binder substantially evenly distributed throughout the refractory roll body, said binder being of a material that will maintain its integrity at the temperatures prevailing within said furnace.

4,330,913
METHOD OF MAKING HEAT EXCHANGERS
Richard W. Kritzer, 400 E. Randolph, Chicago, Ill. 60601
Filed Oct. 20, 1980, Ser. No. 198,458
Int. Cl.³ B21D *53/02*; B23P *15/26*
U.S. Cl. 29—157.3 A **10 Claims**



1. The method of forming fins on a heat exchange element, which comprises the steps of

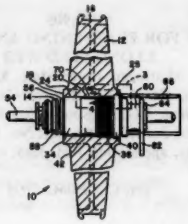
(a) feeding an elongated tubular body member longitudinally past a cutter,

(b) reciprocating said cutter forwardly and rearwardly toward and away from the outer surface of said body member at an acute angle thereto and cutting into said surface during the forward movement of said cutter in a skiving action, thereby to form an upstanding fin, one edge of which is integral with said body member, and

(c) changing the angle of the cutter in a direction transverse to the length of said body member and to the direction of said reciprocation prior to at least some of the forward movements of said cutter, thereby

(d) to provide fins positioned at various angles with respect to said body member in a direction transverse to the length and width of said surface.

4,330,914
BICYCLE WHEEL AND BRAKE ASSEMBLY
Edwin E. Hood, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Jul. 24, 1979, Ser. No. 60,086
Int. Cl.³ B21K *1/28*; B23P *19/04*; B60B *3/06, 5/02*
U.S. Cl. 29—159.01 **14 Claims**



1. A process for making a wheel having a housing for receiving an assembled brake comprising the steps of:

casting a wheel having a housing with an axial bore therein, said axial bore having a first diameter section and a second diameter section;

finishing the surface of said second diameter section to establish concentricity therebetween with the peripheral surface of the wheel;

cutting a cylindrical member to an axial length between a first end and a second end that is substantially equal to the length of the axial bore through the wheel;

machining a guide surface on the peripheral surface of said cylindrical member adjacent said first end, said guide surface having a predetermined dimensional tolerance with said first diameter section;

machining a knurled surface on the periphery of said cylindrical member between a flange adjacent said second end and said guide surface;

forming a relieved section on the peripheral surface of said cylindrical member between said guide surface and said knurled surface;

forming a slanted section on the end of the knurled surface adjacent said relieved section;

placing a brake assembly in said cylindrical member;

aligning said cylindrical member with said axial bore;

applying a force to said flange to move said guide surface through said first diameter section and into an interference engagement with said second section to concentrically position said knurled surface in said axial bore;

moving said cylindrical member into said axial bore to bring said slanted section into engagement with said first diameter section to guide said knurled section into said first diameter;

moving said cylindrical member further into said axial bore to bring said knurled section into engagement with said first diameter section;

broaching said first diameter section with the knurled section on still further movement of the cylindrical member into said axial bore to prevent relative movement between the brake assembly and the wheel; and

retaining material removed from said wheel in said first relieved section during broaching to reduce the possibility

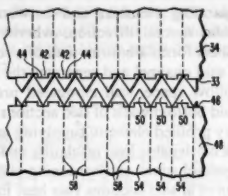
of overstressing the wheel on movement of the knurled section into the axial bore.

4,330,915

TECHNIQUE FOR UNIFORM STYLUS CONFIGURATION

Eugene O. Keizer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,939
Int. Cl.³ B29D *17/00*; B23P *17/00*
U.S. Cl. 29—169.5 **21 Claims**



1. A method of manufacturing a uniform configuration for at least two styli, each stylus having a shank and a tip at one end of said shank, said tip being made from a material different from the material of said shank and having a crystallographic structure, comprising the steps of:

attaching an edge of a first plate of said shank material to one edge of a strip of said tip material, said strip having a face thereof oriented along a predetermined crystallographic plane of said tip material,

cutting said strip into said tips while said plate remains attached to said strip, and

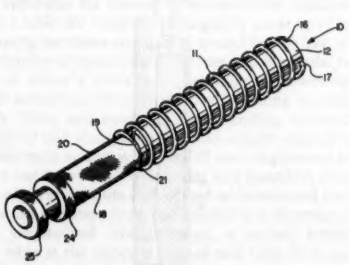
separating said plate into said shanks to form said styli, whereby the orientation of said crystallographic plane with respect to said shank is uniform for said styli.

4,330,916

ASSEMBLY TOOL

Hugh S. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 22, 1980, Ser. No. 199,174
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—227 **3 Claims**



1. An assembly tool upon which a spring is secured for enabling the spring to be inserted within an orifice whose entrance diameter is smaller than the outside diameter of the spring, said tool comprising:

(i) a mandrel consisting of a first and a second section, said first section having a larger outside diameter then said second section and a flange located where said first section meets said second section;

(ii) securing means located at the end of said first section for locking one end portion of said spring as it is positioned upon said first section; and

(iii) a releasable locking device rotatably and slideably mounted upon said second section for securing the other end portion of said spring, said locking device being slideable along said second section to said flange, whereby upon securing the ends of said spring in said securing means and said locking device, and rotating said locking device upon said second section, the outside diameter of said spring is reduced to thereby enable the spring to be inserted within said orifice while secured to said mandrel and then released from said mandrel to be positioned within said orifice.

4,330,917

SEAL EXTRACTING TOOL

Damon Dzurkovich, 1202 N. Sixth St., Reading, Pa. 19601

Filed Mar. 20, 1980, Ser. No. 132,277
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—235 **2 Claims**

1. As an article of manufacture, a tool for extracting ring seals resting on a shoulder within a sleeve-type housing comprising:

(a) generally elongated, cylindrical handle means of a size to enable the user of the tool to grasp the handle means between the thumb and fingers of one hand;

(b) a generally elongated, cylindrical, helical extracting arm terminating at its one end in a generally flat platform, said platform forming an extension of one end of said handle means, said arm terminating at its other end in a flat nipple tip, said arm having dimensions sufficient to enable its insertion into said housing for substantially the housing full length, said tip intended to extend through a ring seal center to guide the positioning and centering of said arm's helix whereby, when said platform is pressed against said housing shoulder while said handle means is rotated, said seal is transferred from said housing, urged upward from said arm tip end toward said handle means, spiraling onto said arm and guided in its movement by said helix's threads; and,

(c) a generally cylindrical flat-ended tamping member attached at one of its flat ends to the other end of said handle means, and terminating at its other end in a nipple, said tamping member having a lesser diameter but generally the same or greater length than said sleeve type housing so that, after a seal is inserted into said sleeve housing, said tamping member may be inserted thereafter and, utilizing said nipple as a guide, to urge said seal downward, said tamping member end causes said seal to be positioned snuggly against said housing shoulder.

4,330,918

HYDROSTATIC PIPE SPLICING APPARATUS

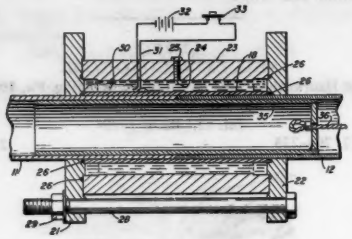
Hugh E. Whitted, III, East Bend, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 24,761, Mar. 28, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 213,817
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—237 **4 Claims**

1. An apparatus for splicing pipe by sealing a sleeve over the ends of adjacent pipe lengths comprising, in combination, a pair of annular end plates sized to closely surround said pipe lengths and abut the ends of a sleeve fitted over the ends of

adjacent pipe lengths, a cylindrical body sealed between said end plates and defining a rigid body having an annular cavity surrounding said sleeve, means for filling said cavity with liquid, and means for firing a charge of propellant in said liquid so as to radially shrink said sleeve into sealing engagement with said pipe lengths.

4. An apparatus for splicing pipe by sealing a sleeve over the ends of adjacent pipe lengths comprising, in combination, a



pair of annular end plates sized to closely surround said pipe lengths and abut the ends of a sleeve fitted over the ends of adjacent pipe lengths, a cylindrical body sealed between said end plates and defining a rigid body having an annular cavity surrounding said sleeve, means for filling said cavity with liquid, and means for firing a charge of propellant in said rigid body so as to radially shrink said sleeve into sealing engagement with said pipe lengths.

4,330,919

METHOD OF MANUFACTURING A CONNECTING ELEMENT

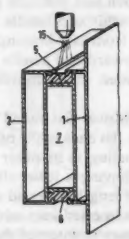
Klaus Bischlipp, Sprockhövel, and Jurgen Pfeiffer, Balve, both of Fed. Rep. of Germany, assignors to Firma Eduard Hueck, Luedenscheid, Fed. Rep. of Germany

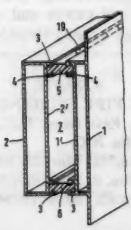
Filed Jan. 30, 1980, Ser. No. 116,806

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904192

Int. Cl.³ B23P *13/00*; E06B *3/26*; E04B *2/84*

U.S. Cl. 29—418 **14 Claims**





1. A method of manufacturing a connecting element, particularly for window and door frames, facade walls and the like, comprising the steps of providing two elongated profiled members spaced from one another in a first direction transverse to the direction of elongation thereof so as to bound with one another a channel and provided with at least two separating members which are connected with said elongated profiled members and spaced from one another in a second direction transverse to said first direction and to the direction of elongation, so that said separating members subdivide said channel into an intermediate hollow space formed between said separating members, and two sections spaced from one another in said second direction and each located outside of a respective one of said separating members and outwardly opening as considered in said second direction, whereby each of said separating members forms a bottom wall of a respective one of said sections of said channel and separates the same from said intermediate hollow space, said elongated profiled members together with said bottom walls of said sections of said channel forming a unitary profiled element; supplying into said sections of said channel a hardenable heat insulating material so as to fill said sections of said channel; and hardening said material in the latter so as to form in said sections two heat insulating inserts connecting said elongated profiled members with each other, spaced from one another by said intermediate hollow space, and separated from the latter by said bottom walls; inserting into said intermediate hollow space a tool; and separating by said tool said bottom walls of said inserts from the remainder portions of said profiled members so as to remove said bottom walls from said intermediate hollow space, whereupon said profiled members remain connected with one another only by said two heat insulating inserts spaced from one another by said intermediate hollow space.

4,330,920

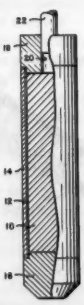
METHOD FOR MANUFACTURING MAGNETOHYDRODYNAMIC ELECTRODES

Don H. Killpatrick, Orland Park, and Henry R. Thresh, Palos Heights, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 24, 1980, Ser. No. 162,543

Int. Cl.³ B23P *17/04*

U.S. Cl. 29—423 **7 Claims**



1. A method of manufacturing a MHD electrode comprising:

providing a billet comprising a high-purity copper core, a thin layer of gold plated onto the core, a tubular sleeve of platinum or palladium surrounding the core such that the core and sleeve form an interface, and a sheath of copper covering the entire sleeve and core,

sealing the billet by non-oxidizing welding methods,

degassing the billet at elevated temperatures,

heating the billet to extrusion temperature,

extruding the billet to form a bar whereby the sleeve and core bind together as a solid solution at the interface,

removing the copper sheath, and

cutting the extruded bar to expose at least one surface of the copper core, the cut bar being suitable for use as a MHD electrode.

4,330,921

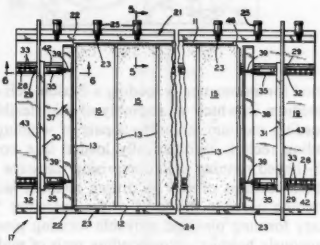
INSULATED WALL SECTIONS AND METHODS OF AND APPARATUS FOR PREFABRICATING THE SAME

Olin N. White, Jr., Rte. #1, Ottawa Lake, Mich. 49276

Division of Ser. No. 944,268, Sep. 21, 1978, abandoned. This application Apr. 17, 1980, Ser. No. 141,185

Int. Cl.³ B23P *11/02;* **B25B** *27/14, 5/14*

U.S. Cl. 29—432 **7 Claims**



1. In a method of producing prefabricated insulated wall sections, the steps of arranging a plurality of framing members in angular relation to one another to define an opening therebetween, positioning porous insulating material in self sustaining sheet form in said opening to substantially fill the same and extend outwardly therefrom at one side thereof, bringing each of said members into engagement with another and with one of said members exerting pressure against an edge of the outwardly extending portion of said insulating material to compress said sheet and urge said insulating material against and into intimate contact with adjacent surfaces of said opening defining framing members, and securing said framing members together in said engaged relationship and with said sheet insulating material under said edge pressure.

4. In apparatus for producing prefabricated insulated wall sections; a table, for receiving an assembly made up of longitudinal framing members arranged in spaced face to face relation, with a plurality of spaced studs between and in angular relation thereto to define a plurality of openings therebetween, and with self sustaining sheets of porous insulating material substantially filling said openings and extending outwardly beyond ends of said studs; a longitudinal straight edge along one side of said table against which one of said longitudinal framing members can be positioned to locate said assembly; transverse straight edges at opposite ends of said table mounted for movement toward and away from one another in a direction parallel to said longitudinal straight edge; a second longitudinal straight edge at the opposite side of said table from said first longitudinal straight edge and mounted for movement toward and away from the same in a direction parallel with said transverse straight edges; means for moving said transverse straight edges against studs in said assembly that are adjacent thereto; and means for moving said second longitudinal straight edge against another of said longitudinal framing members, whereby to cause said other longitudinal framing member to in turn exert edge pressure against said outwardly extending portions of said sheets of insulating material and force the same into said openings, while squaring aligning and retaining the component parts of said assembly in contacting relationship so that they can be secured together with said sheets of insulating material under said edge pressure that is urging said material into intimate contact with adjacent studs and framing members.

4,330,922

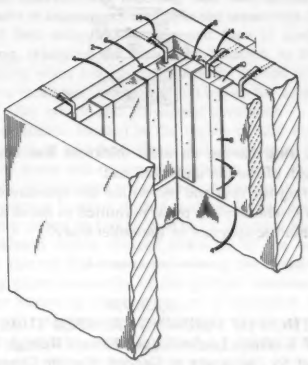
ASSEMBLY AND METHOD OF ATTACHING TO INGOT MOLD

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Hudson, N.H.

Filed Dec. 11, 1980, Ser. No. 215,225

Int. Cl.³ B22D *7/10;* **B23P** *11/00*

U.S. Cl. 29—432 **15 Claims**



1. A method for attaching an insulation board to an upper interior surface of an ingot mold, said method comprising the following:

(a) attaching a plurality of mounting straps to an insulation board, each of said mounting straps having first, second and third flat portions, with said first portion extending parallel to said third portion and said second portion extending perpendicular to said first and third portions, and each of said mounting straps being attached to said insulation board so that said first portion extends parallel to the major plane of the insulation board adjacent to one of the two principal surfaces of that same board, said third portion extends parallel to the major plane of the insulation board adjacent to the other of the two principal surfaces of that same board, and said second portion rests atop said board;

(b) suspending said insulation board adjacent to an upper interior surface of an ingot mold by means independent of said mounting straps, with said board being suspended so that the major plane of the board lies parallel to said upper interior surface and the board is disposed between said first portions of the mounting straps and said upper interior surface; and

(c) driving a plurality of fasteners through said first portions of said mounting straps and into said mold so as to fasten said insulation board to said mold.

4,330,923

METHOD OF MAKING CHUCK ASSEMBLY AND COLLET

Willard Cummings, Pembroke, N.C., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 2,117, Jan. 9, 1979, Pat. No. 4,197,044. This application Apr. 4, 1980, Ser. No. 137,212

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—434 **5 Claims**

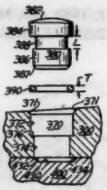
5. A method of making a tool-retaining collet comprising the steps of:

forming a compressible collet body having an external surface and an internal tool-receiving bore;

making a two-diameter aperture extending radially through the collet body between said external surface and said internal bore surfaces;

providing a pin shaped to fit within said aperture and having an undercut mediate along its length;

assembling a ring having a free diameter larger than the larger diameter of the aperture in the undercut of the pin,



said ring having an axial thickness less than the axial length of the pin undercut; and

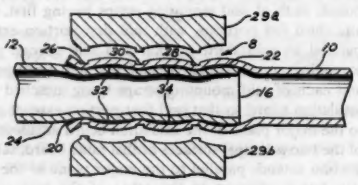
mounting the ring and pin within the aperture of the collet body, whereby the pin is permitted to move along its axis within the aperture of the collet body.

4,330,924

METHOD OF FORMING CRIMPED TUBE JOINT

Gerald J. Kushner, Louisville, and Edward Raleigh, Fern Creek, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 31, 1980, Ser. No. 117,326
Int. Cl.³ B23P *3/00, 25/00*
U.S. Cl. 29—458 **3 Claims**



1. The method of joining tube members comprising:

a. providing a first tube having an end portion dimensioned to receive the end portion of a second tube with radial clearance between the contiguous surfaces to be joined;

b. coating a first portion of said second tube with an ambient temperature curable adhesive;

c. coating a second portion of said second tube in an area between said adhesive and the free end thereof with a cured resilient sealer;

d. telescoping said second tube into said first tube so that said sealer and adhesive portions are in said radial clearance;

e. deforming said tubes to form a pair of axially spaced end grooves and a central groove intermediate said spaced grooves in the outer surface of a portion of the first tube that overlaps said second tube to reduce the diameter of said first tube and cause said first tube to grip said second tube to reduce to substantially zero thickness the sealer and adhesive beneath said grooves;

f. continuing to deform both of said tubes radially inwardly to form said radial clearance into a first pocket between one of said end grooves and said central groove for containing said sealer to form a first instant sealing area and a second pocket between the other of said end groove and said central groove for containing said ambient curable adhesive and;

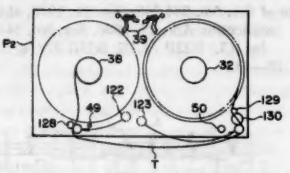
g. allowing said adhesive to cure in ambient temperature a sufficient time to form a second sealing area.

4,330,925

METHOD AND APPARATUS FOR AUTOMATICALLY LOADING FLEXIBLE BELT-SHAPED RECORDING MEDIUM

Toshihiro Kato, and Yuzo Tsunekawa, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1980, Ser. No. 136,579
Claims priority, application Japan, Apr. 2, 1979, 54/39500
Int. Cl.³ B23Q *3/00*; B23P *21/00*
U.S. Cl. 29—464 **9 Claims**



1. A method for automatically loading a flexible belt-shaped recording medium in which an assembly of said flexible belt-shaped recording medium including a pair of winding cores having winding reels is automatically loaded in a container having an S-shaped running path comprising the steps of:

holding both surfaces of said recording medium laid over said winding cores in the form of the character "S" by stationary forming pins and movable forming pins while simultaneously holding corresponding reels of said winding cores;

shifting said assembly and said stationary and movable forming pins so that said assembly is positioned above a body part of said container;

lowering said assembly and said stationary and movable forming pins so that guide members forming said S-shaped running path of said body part are inserted into hollow lower end portions of said stationary and movable forming pins; and

lifting said stationary and movable forming pins from said guide members while releasing said reels whereby said assembly is automatically loaded at a predetermined position including said S-shaped running path in said body part of said container.

3. An apparatus for automatically loading a flexible, belt-shaped recording medium in a container having an S-shaped running path comprising:

(a) a pallet, a pair of supporting rods for supporting a pair of winding cores, stationary guide members for supporting said recording medium and brake means for said winding cores being provided on an upper surface of said pallet;

(b) forming means positioned above said pallet comprising a pair of stationary forming pins and a pair of movable forming pins adapted for holding both surfaces of said recording medium with the rear surface of said recording medium being supported by said stationary guide members on said pallet, means for releasing said brake means, and winding core holding means;

(c) transfer means for shifting said forming means to a body part of said container so that said forming means is positioned above said body part of said container;

(d) said flexible, belt-shaped recording medium comprises a magnetic tape including a magentic layer on a flexible, non-magnetic supporting material;

(e) said forming means further comprises a pusher disposed above and between said stationary and movable forming pins for deflecting the free end of an elastic piece mounted in said S-shaped running path in said body part of said container away from said S-shaped running path; drive means for turning at least one of said winding core holding means around the axis of said winding core; and suction means for retaining the front surface of said magnetic tape which is supported by said movable forming pins arranged

in the vicinity of said body part at a predetermined position, said movable forming pins being inserted into the hollow lower parts of said guide members forming said S-shaped running path in said body part.

4,330,926

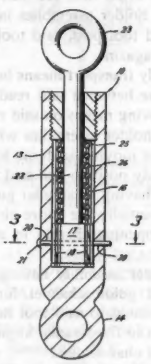
METHOD OF FORMING AND ASSEMBLING AN ANCHOR PULLOUT APPARATUS

Richard H. McCall, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 947,917, Oct. 2, 1978, Pat. No. 4,217,776, which is a continuation of Ser. No. 905,262, May 12, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,554

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—526 R **10 Claims**



1. A method for forming and assembling an apparatus for testing the minimum pullout strength of a ground anchor comprising the steps of,

(a) forming an open ended housing with means on the housing closed end for attaching to the anchor,

(b) inserting one end of an elongated means in the open end of the housing,

(c) connecting an attachment means on the elongated means other end to a load applying source,

(d) mounting a compression spring around the elongated means, and

(e) inserting a shear pin of a predetermined strength through the housing closed end and the elongated means so that while applying an increasing load to the elongated means, if the anchor does not move prior to breaking of the shear pin, a safe, satisfactory, and reliable anchor is indicated said compression spring absorbing the shock when the shear pin breaks.

4,330,927

WIRE STRIPPING AND TERMINATING APPARATUS

Maurice Wolfthal, Ossining, N.Y., assignor to Stewart Stamping Corporation, Yonkers, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,587

Int. Cl.³ H01R *43/00*

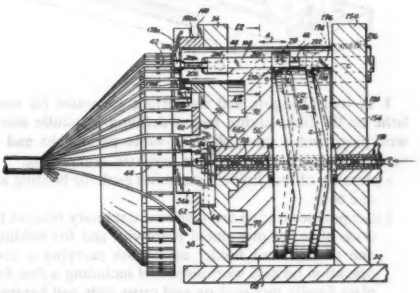
U.S. Cl. 29—564.4 **22 Claims**

1. Apparatus for automatically sequentially stripping the outer end region of insulation from each of a plurality of insulated wires, inserting the bared wire outer end region into a wire-receiving portion of an endmost electrical contact terminal of an interconnected strip of such terminals, crimping said wire-receiving terminal portion to electrically connect the terminal to the bared wire end region and cutting the terminal strip to separate the connected terminal therefrom, comprising:

continuous means for feeding each of a plurality of insulated wires sequentially to a first stripping location and then to a second wire inserting terminal crimping and separating location in a manner such that during operation, respective wires are simultaneously located at said stripping location and said terminal crimping and separating location, said feed means including a continuous run portion having means for positively locating the plurality of wires therein with their longitudinal axes being parallel with respect to each other for movement of the wires in a direction transverse to the wire axes;

means for internittently indexing said feed means so that each wire in sequence is moved in the transverse direction to said first stripping location and then to said second inserting, crimping and separating location, so that upon respective wires being simultaneously moved to said respective locations, said movement ceases for a dwell time period after which said movement continues;

a stripping station located in the region of said continuous run portion of said feed means including means for stripping the outer end region of insulation from each of the plurality of insulated wires when the same is located at said stripping location during said dwell time period, said stripping means including means for gripping the wire at an insulated region thereof inwardly of the outer end region thereof and means for cutting the insulation at a cutting point outwardly of the gripped insulated region and for removing the end region of insulation from the wire, said gripping means including a pair of pivotally mounted gripper members having opposed interacting gripper portions movable between a first open position



and a second closed position wherein said gripper portions grips said insulated wire region and means for pivotally moving said gripper members so as to close the same upon a wire located at said stripping location, said insulation cutting and removing means including an elongate member whose longitudinal axis is substantially parallel to the longitudinal axis of the wires, an insulation cutting device mounted on one end of said elongate member, means for reciprocating said elongate member along its longitudinal axis so that said insulation cutting device is located at said wire insulation cutting point when the said elongate member is at its advanced end of reciprocation and is located outwardly from said wire at its retracted end of reciprocation, and means for operating said cutting device to cut the insulation when the elongate member is at its advanced end of reciprocation, said means for operating said cutting device including a cutter actuator portion formed on at least one of said pivotally mounted gripper members adapted to be aligned with said cutting device at least when said elongate member is at its advanced end of reciprocation and further adapted to activate said cutting device when said gripper portions move to said closed position;

an inserting, crimping and separating station located at the region of said continuous run portion of said feed means downstream of said stripping station in the direction of wire feed including means for inserting the bared outer wire end region of a wire located at said inserting, crimp-

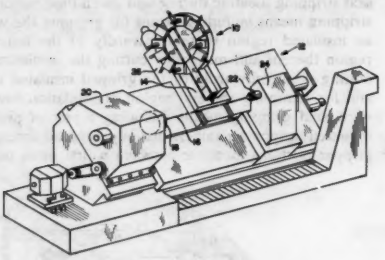
ing and separating location into a wire-receiving portion of an endmost electrical contact terminal of an interconnected strip of such terminals, means for crimping said wire-receiving terminal portion to electrically connect the terminal to the bared wire end region inserted therein and means for cutting the terminal strip to separate the connected terminal from the terminal strip when the wire is located at said inserting, crimping and separating location and during said dwell time period.

4,330,928

AUTOMATIC TOOL CHANGER FOR A LATHE

William C. Coate, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Filed Nov. 13, 1979, Ser. No. 93,726
Int. Cl.[3] B23Q 1/55
U.S. Cl. 29—568 15 Claims



1. A tool changing and supporting apparatus for use on a lathe or the like, having means defining a spindle axis for a workpiece and a cross slide movable parallel to and transversely toward and away from said axis, comprising:

a plurality of tool holder assemblies each for holding at least one tool;

a tool post secured to and disposed stationary relative to said cross slide for movement therewith and for holding any one of said tool holder assemblies carrying a tool for operation on said workpiece and including a first locking plate fixedly mounted on said cross slide and having positioning means thereon, each said tool holder assembly having a second locking plate having further positioning means engageable with said first locking plate positioning means, for aligning any one of said tool holder assemblies in a predetermined position in said tool post when said locking plates are mutually engaged; and

means for urging said one tool holder assembly toward said first locking plate when said one tool holder assembly is in said tool post, including a pair of slide members disposed in spaced parallel relation and mounted in said tool post for sliding movement toward and away from said first locking plate and engageable with corresponding grooves in a tool holder assembly disposed in said tool post for moving said last named tool holder assembly toward and away from said first locking plate, and double-acting hydraulic cylinder means for moving said slide members toward and away from said first locking plate so as to engage and disengage said positioning means;

a tool magazine for carrying said tool holder assemblies and mounted on said cross slide for movement to bring any one of said tool holder assemblies into a ready position aligned with said tool post, said tool post being spaced from said tool magazine; and

tool holder assembly transport means having a rod reciprocable along a line between said ready position and said tool post, and having means on said rod engageable with one of said tool holder assemblies when disposed in said ready position for moving said one tool holder assembly between said ready position and said tool post said rod being supported by a further double-acting hydraulic cylinder motor disposed within said magazine in fixed relation to said tool post, and about which said magazine rotates.

12. A tool changing and supporting apparatus for use on a lathe or the like, having means defining a spindle axis for a workpiece and a cross slide movable parallel to and transversely toward and away from said axis, comprising:

a plurality of tool holder assemblies each for holding at least one tool;

a tool post secured to and disposed stationary relative to said cross slide for movement therewith and for holding any one of said tool holder assemblies carrying a tool for operation on said workpiece;

a tool magazine for carrying tool holder assemblies and mounted on said cross slide for movement to bring any one of said tool holder assemblies into a ready position aligned with said tool post, said tool post being spaced from said tool magazine;

tool holder assembly transport means having a rod reciprocable along a line between said ready position and said tool post, and having means on said rod engageable with one of said tool holder assemblies when disposed in said ready position for moving said one tool holder assembly between said ready position and said tool post;

said tool magazine having an annular guide channel extending around substantially the entire circumference thereof and having an opening therein in alignment with said ready position;

each said tool holder assembly having at least one roller disposed in said guide channel for movement therethrough and mounted to said tool holder assemblies for maintaining them in fixed radial alignment during movement around said channel; and

said engageable means on said rod of said transport means including a segment of channel alignable with said guide channel, in said ready position so as to form a continuous channel therewith through which said rollers travel and which segment of channel is displaceable with said engageable means from said ready position to said tool post with said rollers of a tool holder assembly disposed in said segment.

4,330,929

PROCESS FOR MAKING AN ELECTRICAL COMPONENT HAVING A METALLIC CASING WITH A CONFORMABLE PLASTIC COATING

Jerry D. Cripe, Mesa, Ariz., assignor to Siemens Corporation, Iselin, N.J.

Filed Dec. 6, 1979, Ser. No. 100,947
Int. Cl.[3] H01G 9/00, 9/10
U.S. Cl. 29—570 23 Claims

1. A process for producing an electrical component comprising the steps of:

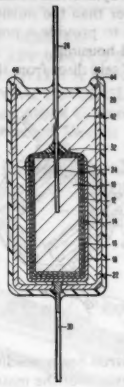
(a) inserting a circuit element having a connecting lead in a metal casing with at least one opening, such that said casing surrounds said circuit element and said connecting lead extends through said opening;

(b) disposing in said opening in said casing a first plastic material, such that said first plastic material surrounds said connecting lead;

(c) hardening said first plastic material;

(d) after completing step (c), coating the outer surface of said

casing as well as said first plastic material in said opening with a second plastic material, such that said second plastic material surrounds said connecting lead as well as the edges of said casing at said opening.



4,330,930

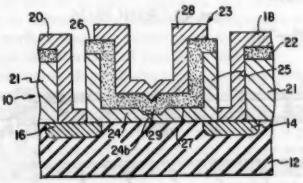
ELECTRICALLY ALTERABLE READ ONLY MEMORY SEMICONDUCTOR DEVICE MADE BY LOW PRESSURE CHEMICAL VAPOR DEPOSITION PROCESS

Richard M. Morley, Yonkers; Jagir S. Multani, and J. S. Sandhu, both of Dix Hills, all of N.Y., assignors to General Instrument Corp., Hicksville, N.Y.

Filed Feb. 12, 1980, Ser. No. 120,741

Int. Cl.³ H01L *21/18*

U.S. Cl. 29—571 **11 Claims**



1. A process of forming an electrically alterable read only memory semiconductor device comprising the steps of

forming first and second spaced apart regions of a second conductivity type in a substrate of a first conductivity type,

growing a layer of a first insulating material on said substrate in the space between said first and second regions, and

depositing by chemical vapor deposition at a pressure substantially lower than atmospheric pressure a layer of a second insulating material of a higher dielectric constant than said first material on said first layer.

4,330,931

PROCESS FOR FORMING METAL PLATED REGIONS AND LINES IN MOS CIRCUITS

Sheau-Ming S. Liu, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 3, 1981, Ser. No. 231,121

Int. Cl.³ H01L *21/26*

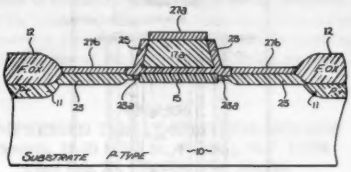
U.S. Cl. 29—571 **13 Claims**

1. A process for forming a metal covered substrate region and a metal covered polysilicon member adjacent to said region, comprising the steps of:

forming said polysilicon member from a polysilicon layer with a masking member;

subjecting said substrate to an oxidation step such that an oxide layer is formed on the sides of said polysilicon member and on said substrate region adjacent to said member;

subjecting said substrate to an oxide damaging ion bombardment such that said sides of said member are protected by said masking member;



removing said damaged oxide and masking member so as to expose said region and the upper surface of said member; and

forming a metal layer over said exposed region and said exposed surface of said member;

whereby a metal covered region and metal covered polysilicon member are formed.

4,330,932

PROCESS FOR PREPARING ISOLATED JUNCTIONS IN THIN-FILM SEMICONDUCTORS UTILIZING SHADOW MASKED DEPOSITION TO FORM GRADED-SIDE MESAS

Hayden Morris, Washington, D.C., and Richard F. Bis, Mount Airy, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 926,364, Jul. 20, 1978. This application May 14, 1980, Ser. No. 149,801

Int. Cl.³ H01L *21/203, 21/283*

U.S. Cl. 29—579 **11 Claims**

1. A process for growing a thin-film on a substrate in a controlled environment from a semiconductor alloy, comprising:

heating the substrate;

maintaining a source of the alloy at a temperature greater than its sublimation temperature;

placing a first mask having an aperture between the substrate and the source;

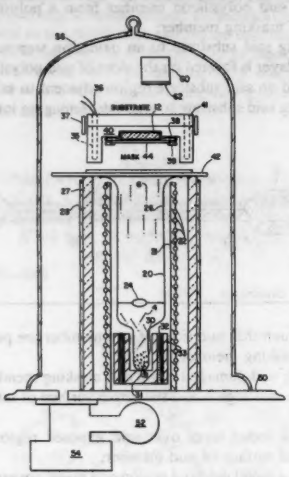
exposing the substrate to the source;

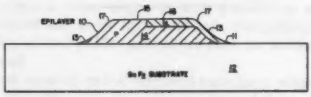
depositing the alloy through the mask and onto the substrate to form a thin film having a mesa and a plurality of graded sides;

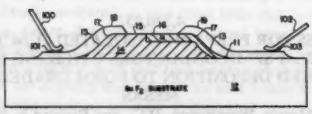
implanting to a controlled depth part of the mesa, at least one graded side and the substrate adjacent the at least one graded side with ions to change the p/n characteristics of the implanted area;

depositing through a second mask a first electrical contact

on the implanted part of the mesa the implanted one graded side and the adjacent implanted substrate; and







attaching a first electrical lead to the first electrical contact off mesa and above the adjacent implanted substrate.

4,330,933
FABRICATION METHOD FOR INSTRUMENT MATERIAL HOLDER

Henry W. Bullinger, Wilton, and Clifford L. Friesel, Redding, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 28, 1980, Ser. No. 172,589
Int. Cl.³ H01C *7/02*
U.S. Cl. 29—612 **11 Claims**

1. An improved method of fabricating a circular material holder for a measuring instrument such as a differential calorimeter;

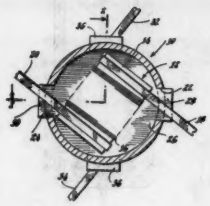
the method comprising the steps of forming a batch of the discs sufficient for production of a batch of predetermined size of the material holders by punching the discs from sheet metal with a punch and die,

sorting the discs according to diameter into at least two sets of discs including a first set and another set consisting of discs having diameters smaller than the discs of said first set,

the number of discs in each set being substantially equal,

machining a batch of cylindrical housings with the inside diameter of each cylindrical housing being machined to be somewhat smaller than the outside diameters of the first set of said discs to provide a press fit of said first set of discs within said housings,

press fitting one of said discs from the first disc set into each



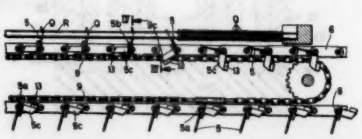
housing and electron beam welding the disc into place to form the top partition of the material holder,

assembling a coil and associated insulators against the bottom of the partition formed by the welded disc and press fitting into each housing one of the discs from the set of smaller diameter discs to form a second partition within said housing and electron welding the second partition disc into place.

4,330,934
APPARATUS FOR PULLING TRANSVERSE FINS ONTO A PLURALITY OF PIPES

Peter Denner; Egon Ernst, both of Ratingen, and Alfred Jockel, Essen, all of Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,309
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921416
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—726 **7 Claims**



1. In an apparatus for pulling transverse fin plates onto a plurality of pipes which are arranged fixed in position alongside of each other by carriers, two ends of which are operatively swingably mounted onto respective conveyor chains between a work position engaging the fin plates and a disengagement position releasing the fin plates, the carriers each being provided with a support foot which holds the carriers in the work position, the support foot being supported on support members of an endless control chain which support members extend over a respective length of a pull-on region for the transverse fin plates and said support members are moved by means of the control chain in an opposite direction to the direction of movement of the carrier conveyor chains in order to displace a point a release of the carriers corresponding to the transverse fin plates already pulled on the pipes, the improvement wherein

at least one said control chain is formed as a three-strand chain having outer strands and a central strand therebetween,

stationary support rails,

said outer strands are supported on said stationary support rails, and

said central strand is formed of said support members and

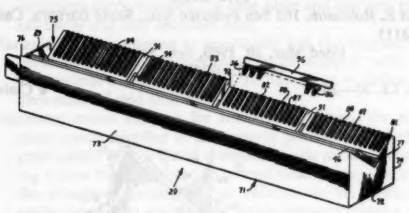
constitutes means for directly supporting said support feet of said carriers, respectively, exclusively in the pull-on region.

4,330,935

METHODS OF AND APPARATUS FOR ASSEMBLING CONTACT ELEMENTS WITH A HOUSING TO FORM A CONTACT MODULE

Thomas G. Blair, Jr., and Alfred C. Kummer, both of Omaha, Nebr., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 10, 1980, Ser. No. 158,083
Int. Cl.³ H01R *43/04;* B23P *19/04*
U.S. Cl. 29—884 11 Claims



1. An apparatus for use in the insertion of a plurality of contact elements into openings which are arranged in a plurality of parallel rows in a housing portion, said apparatus comprising:

means for holding a housing portion successively in each of a plurality of contact element insertion positions, the housing portion having a plurality of openings arranged in a plurality of parallel rows and extending between two major surfaces which are connected through peripheral edge surfaces, said holding means including means for supporting the housing portion along one of its edge surfaces and for supporting said housing portion along portions of one of its major surfaces, said supporting means being in substantially continuous engagement with the edge surface and the portions of the one major surface through the plurality of positions; and

means extending through the plurality of positions and having successive portions spaced at incrementally greater distances from said means which supports the edge surface of the housing portion for supporting a plurality of spaced-apart contact elements prior to their insertion into the openings of the rows of the housing portion, each of said successive portions being associated with one of the insertion positions and aligned with one of the rows of openings in a housing portion in the associated insertion position, said supporting means for the contact elements being formed to accommodate projecting free end portions of inserted contact elements between the plurality of contact elements to be inserted at an insertion position and said means which supports the edge surface of the housing portion to permit a housing portion having at least one row of inserted contact elements to be moved into and out of the contact element insertion position.

8. A method of inserting a plurality of contact elements into each of a plurality of rows of openings in a housing portion, each of the openings in the housing portion extending between two major surfaces of the housing portion, the housing portion having a peripheral edge surface which joins the two major surfaces, said method including the steps of:

supporting a housing portion along two surfaces which lie in intersecting planes and which are inclined to a horizontal line, one of said planes being parallel to at least one of the major surfaces of the housing portion and the other of the planes being parallel to the peripheral edge surface of the housing portion;

moving the housing portion successively into and then out of each of a plurality of contact element insertion positions while maintaining the housing portion in engagement with said two supporting surfaces;

supporting a plurality of spaced contact elements in alignment with the housing portion in each of the insertion positions with each successive plurality of contact elements being spaced a greater distance from said other plane than the preceding plurality; while

causing the openings in successive ones of the rows in the housing portion to be aligned with the plurality of contact elements in successive ones of the insertion positions; and

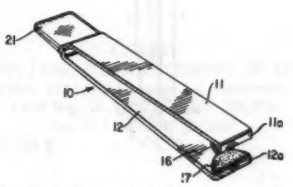
causing the contact elements which are supported at each of the insertion positions to be inserted into the openings of the aligned one of the rows of the housing portion.

4,330,936

COMPRESSED TABLET-SPLITTING HOLDER

Oscar S. Swarth, 25-30 163rd St., Flushing, N.Y. 11358

Filed Feb. 23, 1981, Ser. No. 236,746
Int. Cl.³ B26B *17/00*
U.S. Cl. 30—124 2 Claims



1. A device for securely holding compressed tablets so that they may easily and accurately be divided into equal halves comprising two jaws having opposed laterally extending inline uninterrupted surfaces, each of said surfaces lying in a plane along the lateral extent of jaws, means for moving said jaws and said surfaces toward each other, resilient members carried by each of said jaws and mounted adjacent to said opposed surfaces, a portion of each resilient member extending toward the other resilient member for a greater distance than the adjacent surface extends toward the opposed surface of each jaw, a tablet being adapted to be held between said jaws with a part of the tablet extending inwardly of said jaws and the remainder thereof extending outwardly of said jaws, such that during an initial movement of said jaws toward each other, the inwardly extending part of said tablet is held between said jaws while being cradled by said extending portions of each resilient member, further movement of said jaws effecting compression of said resilient members about said tablet and retention of said tablet by said resilient members between said opposed surfaces whereby the part of said tablet extending outwardly from said jaws may be grasped and the tablet may be split into said inwardly and outwardly extending parts, wherein said means for moving said jaws toward each other comprises flat spring-like arm, said jaws comprising integral end portions of said arms bent toward each other.

4,330,937

FISH FILLETTING KNIFE

James R. Cope, 10500 Cherokee La., Leawood, Kans. 66206

Filed Jul. 25, 1980, Ser. No. 172,452
Int. Cl.³ A22B *5/16;* B26B *3/06*
U.S. Cl. 30—153 4 Claims

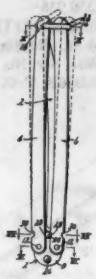
1. A fish filleting knife comprising:

a. an elongated, generally planar blade,

b. a pair of elongated extension members each pivoted adjacent one end thereof to the base end of said blade on an axis transverse to itself and normal to the plane of the blade, said axes being spaced apart transversely of the general extent of the blade, said members being pivotally movable between a first position generally coextensive

with said blade, the then confronting surfaces of said members each having a groove formed therein for receiving a portion of said blade, whereby said members form a protective cover for said blade, and a second oppositely extending position, wherein said members form a handle for said blade,

c. a locking pin fixed in said blade adjacent the pivotal axes of said extension members and normal to the plane of the blade, being transversely midway between said axes but spaced further from the point of the blade than said axes, whereby to be confined between said extension members when they are in said second position, and hence to inhibit pivotal movement of said blade relative to said extension members, and



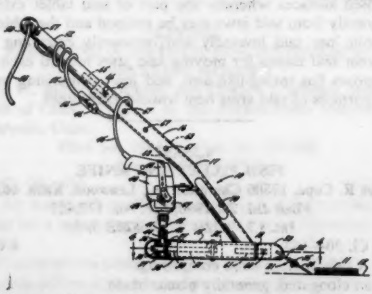
d. fastener means operable to secure the ends of said extension members opposite their pivoted ends releasably together when the latter are in either said first or said second position, whereby said extension members are caused to grip said locking pin firmly therebetween, said locking pin being operable normally to position said extension members in a relationship diverging away from their pivoted ends, said extension members being formed of resilient material whereby their more widely spaced ends may be manually pressed toward each other for connection by said fastener means, whereby the spring tension of said members applies a multiplied gripping force to the locking pin therebetween.

4,330,938

CARPET STRIPPING MACHINE

Raymond G. Martin, 8160 W. State Street Rd., Winnebago, Ill. 61088

Filed May 11, 1981, Ser. No. 262,198
Int. Cl.³ A47L *11/12*
U.S. Cl. 30—169 **10 Claims**



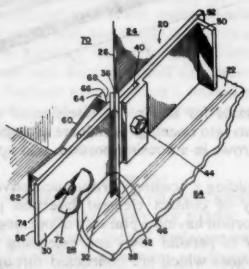
1. A machine for cutting a carpet away from a floor, said machine comprising a generally horizontal frame having front and rear ends, a handle projecting upwardly and rearwardly from said frame, an elongated transversely extending blade located in front of said frame, means mounting said blade for back and forth reciprocation on said frame, mechanism supported on said frame and operable when rotated to cause said blade to reciprocate back and forth, and an electric drill detachably secured to said machine, said drill having an electric motor and having a power-rotated chuck releasably connected to said mechanism and operable to rotate said mechanism when said motor is energized, said mechanism comprising an input shaft adapted to be rotated about an upright axis, an upwardly opening wrench-type socket secured to the upper end of said shaft, and a bolt having a head sized and shaped to fit into and mate with said socket and having an upwardly projecting shank adapted to be gripped releasably by said chuck.

4,330,939

TEMPLATE FOR TRIMMING COVED LINOLEUM AND THE LIKE

John E. Robinson, 161 San Federico Ave., Santa Barbara, Calif. 93111

Filed Mar. 20, 1980, Ser. No. 132,134
Int. Cl.³ B26B *29/00*
U.S. Cl. 30—289 **6 Claims**



1. A template for trimming coved linoleum positioned against a wall at a corner to form a symmetrical coved linoleum corner between two linoleum edges comprising

an elongated guide support terminating in a longitudinal reversed end which extends outwardly therefrom at an acute angle in a predetermined direction and wherein the longitudinal reversed end includes a bottom edge which defines one side of a longitudinal cutting-tool receiving slot;

a base plate terminating in a longitudinal deflected edge which extends outwardly therefrom at said acute angle and in said predetermined direction to position said longitudinal deflected edge in opposed spaced parallel relationship to the longitudinal reversed edge of the elongated guide support, said longitudinal deflected edge including a bottom portion and being joined to said longitudinal reversed edge to form an assembly having a predetermined spaced slot therebetween wherein the bottom portion of the longitudinal deflected edge defines the other side of a longitudinal cutting-tool receiving slot;

an elongated guide member having a selected length and secured at one end thereof to the bottom portion of said elongated guide support on the end opposite to that terminating in said longitudinal deflected edge, said elongated guide member terminating at its other end in a guide element which is adapted to engage a said wall corner, said elongated guide member being secured to said elongated guide support in a manner to enable the guide element to engage a said wall defining the other side of a wall corner and which intersects with the linoleum end to position the slot opposite a said wall corner with the linoleum end to be severed extending past the slot and between the bottom portion of the elongated guide support and elongated guide member whereby a cutting-tool can be inserted into said slot and projected through a said linoleum end and drawn along said slot to sever a said

linoleum end to form an linoleum edge having a preselected angle which is adapted to mate with a linoleum edge having a preselected angle formed in a linoleum end positioned adjacent the other side of a wall corner to form a symmetrical coved linoleum corner between two linoleum edges having preselected angles, said elongated guide member having a gripping member located adjacent the guide element and adapted to removably engage a said linoleum end extending beyond a said wall corner to clamp a said linoleum end against the bottom portion of the elongated guide support;

a base plate extension adapted to be fastened to the end of the base plate located adjacent the end terminating in the longitudinal deflected edge, said base plate extension being adapted to engage and urge a said linoleum end against a wall to form a tight gripping surface between the elongated guide support, the base plate and the base plate extension and said linoleum end;

fastening means adapted to removably join the longitudinal reversed edge of the elongated guide support with the longitudinal deflected edge of the base plate to define the dimension of said slot; and

fastening means adapted for removably affixing the elongated guide member to the bottom portion of said elongated guide support, said elongated guide member fastening means being adapted to permit relative movement of the elongated guide member relative to the elongated guide support to position the guide element relative to a said wall corner and to permit movement of the elongated guide support and base plate assembly relative to a said corner to position said cutting-tool receiving slot relative to a said wall corner.

4,330,940

DEVICE FOR MEASURING THE OIL LEVEL IN CLOSED HOUSINGS

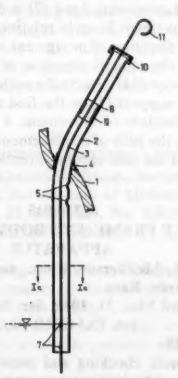
Walter Leitgeb, deceased, late of Bergisch Gladbach, Fed. Rep. of Germany (by Waltraud J. E. Leitgeb, Andreas G. J. Leitgeb, Martin J. H. Leitgeb, Johanna G. M. A. Leitgeb, heirs), assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,421

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923464

Int. Cl.³ G01F *23/04*

U.S. Cl. 33—126.7 R **5 Claims**



1. A device for overpressure measuring the oil level in a closed housing, especially of internal combustion engines and transmissions, said device comprising in combination:

a sleeve fixedly connected to said housing, one end of said sleeve projecting into said housing and being adapted to end below the minimum oil level, said sleeve, within said housing, being provided with openings as far as possible above the maximum oil level for equalizing the pressure to the interior of said housing;

a dipstick removably insertable in said sleeve;

abutment means provided on at least one of said sleeve and said dipstick for limiting the depth of insertion of said dipstick in said sleeve in the measuring position; and

a stopper arranged on said dipstick for closing said sleeve, said stopper, in the measuring position during insertion of said dipstick up to said abutment means, being located so far below the outer end of said sleeve by a distance equaling at least 1½ times that oil column level corresponding to overpressure particularly in said housing such that an exact measurement of oil level is made possible directly free of any need to wipe said dipstick initially to avoid an erroneous or false oil level measurement therewith.

4,330,941

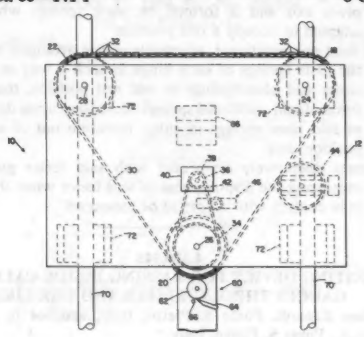
MEASURING LINEAR DISPLACEMENT OF AN OBJECT

Ernest K. Haley, 1210 Old Cannons La., Louisville, Ky. 40205

Filed Sep. 18, 1980, Ser. No. 188,570

Int. Cl.³ G01B *3/12, 5/04*

U.S. Cl. 33—141 F **8 Claims**



1. A measuring system for accurately measuring the linear displacement of a longitudinal object having a straight longitudinal side, such as a steel beam moving on a conveyor, comprising:

a metering device including a frame; a plurality of spaced pulleys rotatably mounted on said frame; a continuous loop trained for travel around said pulleys, a portion of the path of travel of said loop extending parallel to the straight side of the object; and means to releasably attach said loop to the object along the parallel portion of the path of said loop;

means to move said metering device reciprocally toward and away from the straight side of the object, said means to move including a fluid piston and cylinder means;

means to hold said metering system resiliently against the object, said means to hold resiliently including a spring located between said piston and cylinder means and said metering device;

means to convert the movement of said loop to indicate the linear movement of the object; and

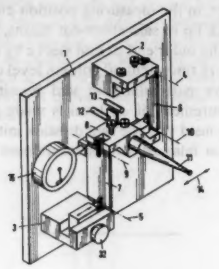
a limit switch which initiates the operation of said means to convert after said metering device is positioned by said means to move such that said loop is releasably attached to the object.

4,330,942

LENGTH-MEASURING PROBE FOR MEASUREMENT

Rüdi Blechmann, Wipperfürth, Fed. Rep. of Germany, assignor to Klingelnberg Söhne, Remscheid, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,707
Int. Cl.³ G01B 5/00, 5/20
U.S. Cl. 33—169 R 4 Claims



1. A length measuring probe for measuring gears, comprising:

a feeler;

a planar four-bar-hinged guide including a base plate and supports for supporting and linearly guiding said feeler, said guide also including four hinges, each of which has a pivot axis and is formed by plate springs which are adapted to occupy a rest position;

at least one additional, adjustable spring arranged between the plate springs of each hinge in such a way as to prestress said plate springs in said rest position, the spring force of said additional springs decreasing upon deflection of said plate springs in either direction out of said rest position; and

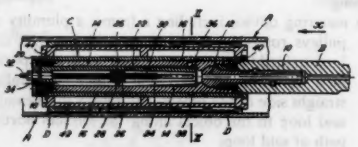
means operatively connected with said feeler guide for measuring the displacement of said feeler when the latter is in contact with a gear to be measured.

4,330,943

TESTING DEVICE FOR PASSING INSIDE CALIPER GAUGES THROUGH PIPES AND THE LIKE

Stefano Zanardi, Ponte S. Pietro, Italy, assignor to Lazzari S.p.A., Ponte S. Pietro, Italy

Filed Dec. 23, 1980, Ser. No. 219,778
Claims priority, application Italy, Jan. 7, 1980, 19069 A/80
Int. Cl.³ G01B 5/08
U.S. Cl. 33—178 R 12 Claims



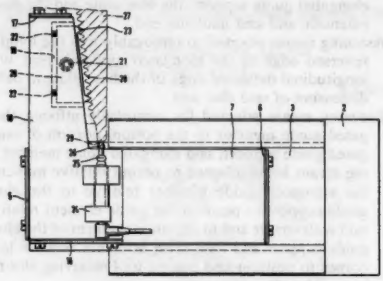
1. A coupling device for use with an inside caliper gauge and a supporting rod for testing pipes and the like, comprising a first member for connection to the supporting rod to be driven by the rod in one direction into a pipe to be tested, a second member intermediate said first member and the inside caliper gauge for supporting said gauge inside the tube to be tested, and coupling means interposed between said first and second members for operatively connecting said first and second members, whereby the supporting rod drives the inside caliper gauge in said one direction within the pipe, said coupling means breaking operative connection between said members when said second member encounters resistance to movement in said one direction, thereby to stop movement of the inside caliper gauge.

4,330,944

ARRANGEMENT FOR THE TESTING OF A THREAD

Hans Maisenbacher, Oberndorf, and Harald Martin, Schönwald, both of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,333
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931273
Int. Cl.³ G01B 3/48, 5/16
U.S. Cl. 33—199 R 11 Claims



1. Arrangement for a processing machine for the testing of the mutual position of a conical threading and a contact shoulder associated therewith through the intermediary of a sensing device, wherein a first measuring support is supported on a guide block, and is moveable relative to said guide block in a first direction of movement, a second measuring support is resiliently supported, on the first measuring support and said second support is moveable in a linear second direction of movement; a first measuring head is moveable towards the threading in the first direction of movement, and a second measuring head is moveable against the contact shoulder in the said second direction of movement, comprising for the movement of the first measuring head (20) against the threading (28;35) the first measuring head (7) is displaceable in the first direction of movement linearly relative to the guide block (1, 4) and the first direction of movement is located at an angle of 90° relative to the second direction of movement and that a first sensing device (14) detects the path of displacement of the first measuring support (7) or the first measuring head (20) in the said first direction of movement; a second sensing device (24) determines the path of displacement of the second measuring head (26) in the said second direction of movement.

4,330,945

VEHICLE FRAME AND BODY ALIGNMENT APPARATUS

Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Filed Mar. 31, 1980, Ser. No. 135,867
Int. Cl.³ G01B 11/27
U.S. Cl. 33—288 6 Claims

1. An alignment checking and measurement apparatus for vehicle frame and body portions comprising:

(a) a plurality of measurement scale carriers each comprising an elongate, rigid bar having opposite end portions; each bar having scale indicia extending substantially the length thereof;

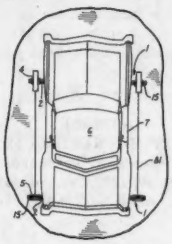
(b) cooperating mounting means including mounting slide members sleeved about a respective bar and translatable at least on the opposite end portions thereof, each of said mounting slide members respectively having sockets af-

fixed thereto and having connectors extending outwardly from said sockets and pivotally mounted therein, said connectors including finger means for connection to selected vehicle frame and body portions corresponding to vehicle measurement points;

(c) said cooperating mounting means being positioned on said opposite end portions for mounting said measurement scale carriers transversely of the longitudinal axis of said vehicle;

(d) target means detachably and adjustably mounted on the end portions of a first of said measurement scale carriers and respectively including a target slide member sleeved about a respective bar and translatable thereon and a planar member extended outwardly from a respective target slide member and having target indicia thereon; and

(e) a laser beam emitting sighting instrument detachably and adjustably mounted on the end portion of a second of said measurement scale carrier for mounting on said vehicle in



longitudinally spaced relationship to said first of said measurement scale carriers with said sighting instrument longitudinally spaced from said target means for longitudinally aligning said sighting instrument and said target means by impinging the laser beam of a sighting instrument on a respective target means planar member whereby the point of impingement of said laser beam relative to a respective target indicia may be seen by an operator;

(f) said sighting instrument having mounting means including a carrier member for translating movement on said end portion of said second measurement scale carrier and pivot means located between said second scale carrier member and said sighting instrument; said pivot means facilitating said sighting instrument in swinging about said second measurement scale carrier such that said laser beam sweeps a plane perpendicular to the longitudinal axis of said second measurement scale carrier.

4,330,946

HIGH EFFICIENCY MATERIAL DRYING

Calice G. Courneya, Alexandria, Minn., assignor to Ralph S. Tillitt and Ronald C. Rutten, both of Alexandria, Minn.

Filed Sep. 23, 1980, Ser. No. 189,905
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **37 Claims**

1. Apparatus for drying material, comprising:

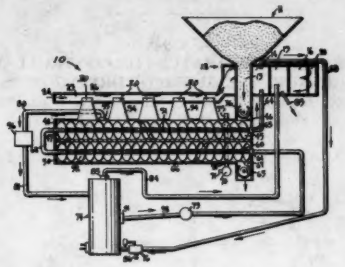
a drying chamber for containing the material to be dried, said drying chamber having an outlet;

means operatively connected to said outlet for removing gas from said chamber to lower the pressure within said drying chamber;

means for applying microwave radiation energy to the material within the drying chamber to remove vaporizable liquid therefrom;

means for admitting a limited amount of gas into said drying chamber at a location spaced from said outlet for establishing a flow of gas generally across the material to be dried to remove from the chamber liquid vaporized from the material; and

heat reclaim means operatively connected to said gas removing means and including heat exchange means for recovering heat energy from the gas and removed liquid from said



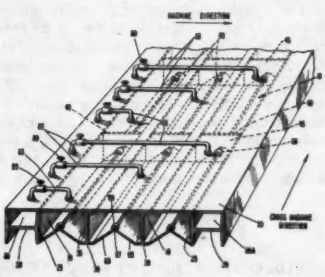
chamber and for applying said heat to the material to be dried.

4,330,947

APPARATUS FOR AIDING WATER REMOVAL OF A PAPER WEB BY INDEPENDENTLY CONTROLLING THE STEAM FLOW IN A PLURALITY OF COMPARTMENTS

Benjamin A. Throp, Menands, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Oct. 27, 1980, Ser. No. 200,683
Int. Cl.³ F26B *21/12*
U.S. Cl. 34—54 **1 Claim**



1. An apparatus for aiding water removal from a paper web comprising:

two parallel I-beams turned on their side and acting as end structural members;

a plurality of I-beams standing upright, placed parallel to and between the end structural members and serving as intermediate structural members;

a plurality of stiffeners perpendicular to and joined with the I-beams forming a matrix of compartments;

a cover support secured to and spanning the I-beams and the stiffeners and forming a side of the compartments farthest from the paper web;

V-shaped baffles forming a side of each compartment closest to the paper web, with the vertices of the baffles pointing away from the web;

a gap between the V-shaped baffles at the vertices of the V for permitting steam to exit the compartments to the web;

at least one primary steam duct formed by the cover support and the upper troughs of the sideways I-beam end members;

a plurality of pipes with each of said compartments being connected by at least one of said pipes to said at least one primary steam duct; and

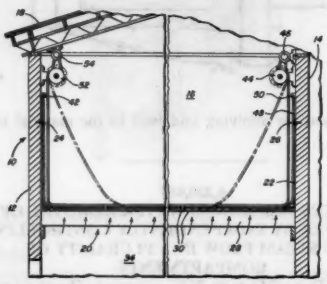
a plurality of valves, each valve controlling the flow of steam through one of the plurality pipes thereby independently controlling the steam flow to each compartment.

4,330,948

METHOD AND APPARATUS FOR CONTROLLABLY BREAKING CAKED BED OF DRYING HOPS

Allen J. Gasseling, P.O. Box 2, Moxee City, Wash. 98936

Filed Aug. 1, 1980, Ser. No. 174,587
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—181 **12 Claims**



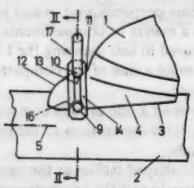
1. An apparatus for drying hops including a generally horizontal support structure defining upstanding heated air passage extending therethrough, an open mesh panel overlying said support structure and adapted to have a bed of hops to be dried disposed thereon, and a plurality of generally parallel elongated members disposed on said panel and to be covered by said bed, raising means operatively connected to said elongated members for raising the latter relative to said panel subsequent to partial drying, and thus settling and crusting of said bed, for the purpose of upwardly displacing said elongated members through the settled and crusted partially dried bed of hops, said raising means including means operative to raise a first set of selected elongated members and thereafter raise a second set of selected elongated members through said bed without lifting said bed.

4,330,949

SHOE FOR CROSS-COUNTRY RUNNING AND CROSS-COUNTRY SKI

Axel Kubelka, and Karl Stritzl, both of Vienna, Austria, assignors to Polyair Produkt Design Gesellschaft m.b.H., Kittsee, Austria

Filed Mar. 19, 1980, Ser. No. 131,843
Claims priority, application Austria, Mar. 20, 1979, 2091/79
Int. Cl.³ A43B *5/04*; A63C *9/00*
U.S. Cl. 36—117 **10 Claims**



1. Shoe for cross-country running and cross-country ski, the shoe for cross-country running being adapted for being connected to the upper side of the cross-country ski in a non-shiftable manner with respect to the longitudinal direction of the ski and in non swivelling manner with respect to an axis extending in normal direction to the plane of the ski, noting that the heel of the shoe can be lifted off the upper side of the ski, characterized in that the shoe for cross-country running is provided at its sole and at least in the area of the shoe tip with protrusions downwardly extending from the plane of the sole and laterally gripping the ski or a component part rigidly connected to the ski, the inner sides of said protrusions, which are directed to the longitudinal center plane of the sole, having a distance one from the other essentially corresponding to the width of the cross-country ski to be used together with the shoe at the contacting position of the shoe tip area of the sole and further characterized in that a locking member is pivotally connected to the ski for holding down the sole at the shoe tip area and for securing the shoe against shifting movement in longitudinal direction, said locking member gripping over an extension provided within the shoe tip area and extending in longitudinal direction in a first pivotal position and is giving free in a second pivotal position this sole extension, noting that the lateral protrusions provided on the sole of the shoe are, in any operational position, gripping over the cross-country ski after having brought the sole extension in a fixed position by means of the locking member.

4,330,950

GOLF SHOES HAVING REPLACEMENT CLEATS

Neil P. Reddien, 143 Ames Ave., Tonawanda, N.Y. 14150

Filed Oct. 20, 1980, Ser. No. 198,605
Int. Cl.³ A43B *5/00*; A43C *15/00*
U.S. Cl. 36—127 **3 Claims**

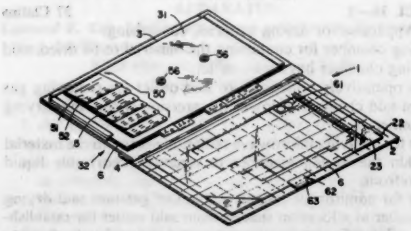
1. A cleated golf shoe, comprising, in combination, a shoe having an upper, a sole and a heel, and a plurality of cleat units on an underside of said sole and heel, each cleat unit including a one piece shank and flange permanently affixed in said underside, a central opening in said shank, a prong unit, a stem on said prong unit, and means for mounting said stem in said central opening for rotation about said stem.

4,330,951

VISUALIZER DISPLAY DEVICE

James E. Hauer, 704 Royal Blvd., Green Bay, Wis. 54301

Filed Mar. 17, 1981, Ser. No. 244,744
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—124.2 **5 Claims**



1. A visualizer display device comprising;

(1) a rectangular display cover of stiff material having a hinge edge and an opposite indexing edge and two side edges and the indexing edge is provided at its corner intersections with the side edges with a display receiving and indexing means,

(2) a rectangular storage cover of stiff material having a hinge edge, an opposite edge and two side edges, and the storage cover is hingably joined to the display cover at their respective hinge edges and the storage cover has as a part thereof a display storage pouch which is substantially coextensive with the storage cover and the pouch is open at the hinge edge and is closed at the side edges and at the opposite edge of the storage cover,

(3) at least one row of hinged transparent sleeves configured so as to receive conventional file cards and the row of hinged sleeves as a unit is detachably secured to the storage pouch by conventional securement means,

(4) a plurality of transparent displays, each display being formed of a rectangular substrate of transparent material and having two side edges, a tab edge, and an opposite edge and the substrate has indelibly imprinted thereon graphics, indicia and the like and the tab edge of each display has secured thereto a tab which projects therefrom and which has contained thereon identification indicia and the tabs of each display is positioned so that when the displays are placed in overlaying indexed relationship to each other the tabs are laterally offset from one another.

4,330,952

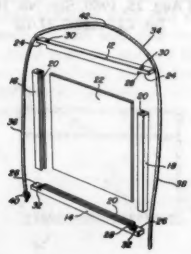
POSTER FRAME

Robert G. Swanson, Rte. 3, Box 170, Alexandria, Minn. 56308

Filed Mar. 30, 1981, Ser. No. 249,999

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—155 **9 Claims**



1. A poster frame for framing and hanging a poster, said frame including elongated upper and lower horizontal frame bars and a pair of upstanding opposite side frame bars extending between and loosely end abutting the lower and upper sides of the corresponding end portions of said upper and lower bars, said bars including inner and outer sides, said inner sides including coplanar grooves formed therein and extending longitudinally thereof for seatingly receiving the corresponding marginal edges of a poster bound on its edges by said frame bars and with said poster forming a keying element engaged in the groove of each frame bar and thus keying said bars together, each against lateral displacement transversely of the plane of said poster, said opposite end portions of the upper and lower frame bars projecting outwardly of the outer sides of the upper and lower ends of the corresponding side frame bars, said end portions including upstanding bores formed therethrough immediately outward of the outer surfaces of the corresponding side frame bars, and a pair of upstanding elongated flexible tension member sections each including upper and lower longitudinally spaced portions thereof passed through bores in one pair of corresponding ends of said upper and lower frame bars, the lower ends of said tension member sections being secured through the bores in the end portions of the lower frame bar and the upper ends of said tension member sections being upwardly convergent and joined at a point above said upper frame bar for hanging support of said tension member sections, and thus said frame, from a suitable support.

4,330,953

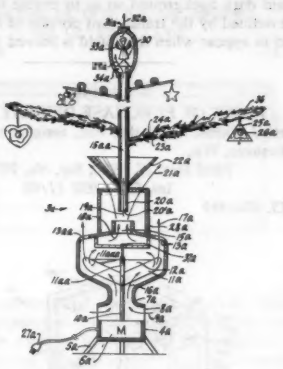
PNEUMATIC CHRISTMAS TREE DISPLAY

Frank Damiano, 322 Washington St., Newburgh, N.Y. 12550

Filed May 19, 1980, Ser. No. 151,205

Int. Cl.³ G09F *19/02, 19/08;* A47G *33/04*

U.S. Cl. 40—407 **7 Claims**



1. A pneumatic display device comprising in combination: a fan casing having lower inlet ports and having first outlet ports, each of the inlet ports and outlet ports being in direct communication with exterior non-enclosed space, and channeling air from the lower inlet ports through an enclosed through-space within the casing's interior and thereafter through said first outlet ports; and a motor mounted within and on the fan casing; and a fan mounted within the enclosed through-space within the fan casing and driven by said motor; and upright support structure mounted on the fan casing, supporting an upwardly and outwardly-flared air-diverter element positioned to divert air passing from said first outlet ports; and the upright support structure further supporting pneumatically actuatable motor-elements positioned at locations to receive diverted air diverted by the outwardly-flared air diverter element.

4,330,954

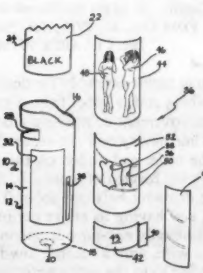
LIGHTER COVER

Victor Lonsmin, 1406 Ogden, LaGrange, Ill. 60525

Filed Mar. 2, 1981, Ser. No. 239,660

Int. Cl.³ G09F *7/00*

U.S. Cl. 40—486 **15 Claims**



1. A novelty sleeve for a cigarette lighter comprising a tubular body portion having a hollow interior space sized to receive the body of a cigarette lighter of conventional design,

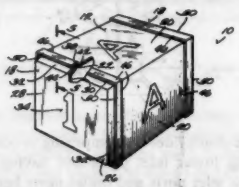
one end of said body portion being closed off to form a bottom end of said sleeve, the other end of said body portion being open to receive the body of a cigarette lighter therein, image presenting means on a side of said sleeve including a filmstrip with opaque portions of said filmstrip having a desired color to provide a portion of an image and a translucent portion having the remaining portion of the image which is caused to appear and disappear, a dark background situated behind said translucent portion of the filmstrip and means for moving a light colored shield behind the filmstrip and between the filmstrip and said dark background so as to enable the portion of the image defined by the translucent portion of the filmstrip to be caused to appear when the shield is moved therebehind.

4,330,955

POINT OF PURCHASE DISPLAY DEVICE

Kenneth J. Rabas, Waukesha, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Dec. 17, 1980, Ser. No. 217,951
Int. Cl.³ G09F *11/00*
U.S. Cl. 40—489 **4 Claims**



1. A display device comprising

a body having peripheral edges defining an open end portion, and

an end member including a main portion having an outer surface and an oppositely facing inner surface, and a lip means extending perpendicularly outwardly from said main portion and defining a first surface area engageable on all said peripheral edges of said body to position said end member over said open end portion with said outer surface exposed to customer view and also defining an oppositely facing second surface area engageable on all said peripheral edges of said body to position said end member over said open end portion with said inner surface exposed to customer view so that said end member can be positioned in engagement with said peripheral edges of said body with said outer surface being exposed to customer view or alternatively with said inner surface being exposed to customer view.

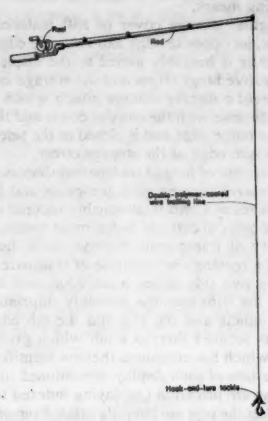
4,330,956

DUAL COATED WIRE TROLLING LINE

John T. McCarthy, 20 Main St., Newtown, Conn. 06470

Filed Oct. 22, 1979, Ser. No. 87,055
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—4 **9 Claims**

1. In a fishing tackle assembly for deep water trolling incorporating a fishing rod, a spool fishing reel and hook-and-lure tackle, the improvement comprising a double-polymer-coated wire trolling line having one end secured to the hook-and-lure tackle and the other end coiled on the spool of the reel, the trolling line being formed of a unitary, single-strand wire line of an outside diameter between about 0.016 inches and about 0.036 inches, and having its entire peripheral surface covered by a first substantially non-porous polymer coating adherently bonded to the wire, with a second, low-friction polymer coating layer bonded to to the entire peripheral surface of the first coating layer, with the combined coatings having a total thickness between about 0.85% and about 15% of the overall outside diameter of the double-coated wire, whereby the reel and the hook-and-lure tackle are connected by the double-polymer-coated wire trolling line having high lubricity, which is capable of smooth closely packed coiling in even helical layers on the spool of the fishing reel, and which is substantially



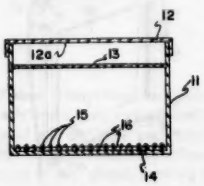
impervious to salt water and fresh water immersion and capable of repeated immersions without significant loss of tensile strength.

4,330,957

BEAN MACHINE

Gary L. Davis, 325 W. Glovers La., Farmington, Utah 84025

Filed Aug. 25, 1980, Ser. No. 180,517
Int. Cl.³ A01G *31/02*
U.S. Cl. 47—14 **3 Claims**



1. A sprouting device for the controlled germination and growth of seeds comprising

a container;

a perforated top inset tray fitting snugly within the container near an upper end thereof;

a perforated bottom closing a lower end of the container, the perforations in the top inset tray and the bottom being smaller than the seeds to be germinated;

a top cover adapted to close the upper end of the container as a lid and to receive the lower end of the container as a drip container; and

removable means sealing the perforations in the bottom.

4,330,958

GATE-OPENING AND CLOSING ASSEMBLY WITH AUTOMATIC LOCKING MEANS

Moscow K. Richmond, 2819 Butler Ave., Los Angeles, Calif. 90066

Filed Mar. 3, 1980, Ser. No. 126,315
Int. Cl.³ E05D *7/06*
U.S. Cl. 49—280 **12 Claims**

1. A gate opening and closing apparatus for shifting a gate

hingedly mounted on one of its sides so that an opposite side thereof is moved to a closed position with respect to a stationary structure or to an open position with respect to said stationary structure, said apparatus comprising:

(a) a fixed member operatively mounted on said gate,

(b) a shiftable plate carried by said fixed member and which plate is movable generally in a path extending between the opposite sides of said gate, said shiftable plate also having an elongate slot with an axis angularly disposed with respect to said path,

(c) a shiftable rod means operatively coupled to a motive means,

(d) pivot means pivotally coupling said rod means to said

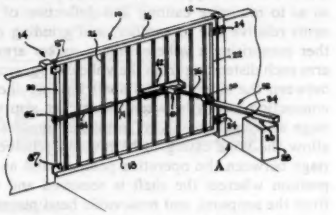


plate through said a elongate slot, said rod means movable through an arc upon actuation of said motive means to shift said gate from an open position to a closed position or from a closed position to an open position, said rod means also causing said pivot means to move in said elongate slot at least when said gate starts to move from the closed position to the open position, and

(e) locking means operatively connected to said shiftable plate and being movable with said shiftable plate to a locking position so that said gate can be locked when shifted to a closed position, and said locking means being movable with said shiftable plate when said gate starts to shift from the closed position to the open position to thereby unlock said gate.

4,330,959

DOORBELT MOLDING

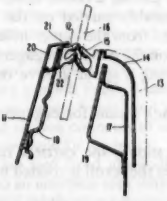
Masumi Nishikawa, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed May 14, 1980, Ser. No. 149,877

Claims priority, application Japan, May 28, 1979, 54-71469[U]

Int. Cl.³ E05F *11/38*

U.S. Cl. 49—377 **1 Claim**



1. A doorbelt molding adapted to extend over and be secured to the outer panel of a door adjacent a window opening comprising an outer portion adapted to be aligned with said door panel, an inwardly extending flange portion adapted to extend over the top of said door panel into close proximity to a window glass, said flanged portion being reversely folded away from said window glass into close proximity with said door panel, a downwardly extending portion integrally connected to said folded flange portion and an outer weatherstrip directly secured to said downwardly extending portion and adapted to engage said window glass wherein about half of said weatherstrip is covered by said folded flange portion.

4,330,960

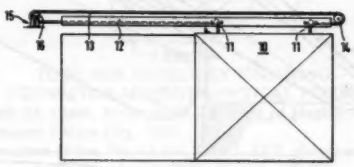
CLOSING ARRANGEMENT FOR SLIDING DOORS AND THE LIKE

Werner Hasemann, Schwerte, and Herbert Cleff, Ennepetal, both of Fed. Rep. of Germany, assignors to Dorma-Baubeschlag GmbH & Co. KG., Ennepetal-Voerde, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,905

Int. Cl.³ E05G *15/06*

U.S. Cl. 49—404 **11 Claims**



1. A closing arrangement for sliding doors or similar elements of the type adapted to slidably move between closed and open positions by a driving force applied to elongated connecting links for moving the door along a lengthwise track, comprising a frame; a rotor having an axis of rotation and operatively connected to said connecting links so that the sliding movement of the door causes a rotation movement of said rotor; a force accumulating flat spiral spring mounted within said rotor for providing a torsional moment of said rotor and having two ends, one end of said spring being rigidly supported on said frame and the other end thereof being tightly clamped on said rotor; brake means operatively connected to said rotor for limiting the closing speed of the sliding door; and coupling means operatively connected to said rotor for preventing the open sliding door from moving inadvertantly backward to its closed position, said coupling means including an electromagnetic coupling and a friction coupling connected thereto, said friction coupling being arranged to limit the torsional moment of said rotor.

4,330,961

SWING TYPE INTERNAL GRINDING FIXTURE FOR CYLINDRICAL GRINDING MACHINES

Sterling L. Brown, Waynesboro, Pa., assignor to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed May 19, 1980, Ser. No. 151,208

Int. Cl.³ B24B *5/12*

U.S. Cl. 51—3 **3 Claims**

1. A cylindrical grinding machine for grinding both inner and outer diameters of a cylindrical workpiece comprising

a workholding assembly for holding and rotating the workpiece, and

wheelhead means including

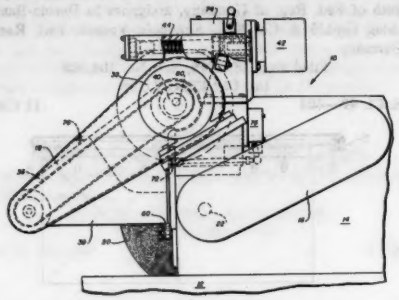
first cylindrical grinding wheel assembly means including a grinding wheel for grinding the outer diameter of the cylindrical workpiece held by said workholding assembly,

second pivotally mounted cylindrical grinding wheel assembly means including a second grinding wheel for grinding the inner diameter of the cylindrical workpiece held by said workholding assembly,

said second cylindrical grinding wheel assembly means pivotally displaceable from a raised remote position to a predetermined grinding position,

mean for selectively defining said grinding position at a precise axial location including a key and a keyway for matingly engaging with said key,

hydraulic motor means operable in a first direction for pivotally displacing said second cylindrical grinding wheel assembly means from said remote position to said grinding position such that said key engages said keyway and operable in a second direction for displacing said second cylindrical grinding wheel assembly means from said grinding



position to said remote position such that said key disengages said keyway, and

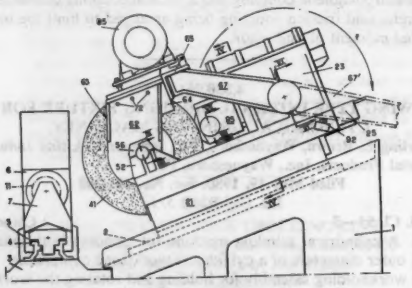
means for maintaining said second cylindrical grinding wheel assembly means in said predetermined grinding position during a grinding operation comprising operating said hydraulic motor means in said first direction.

4,330,962

ASSEMBLY OF GRINDING-WHEELS OF GRINDING MACHINES

Paul Favrot, Gagny, France, assignor to Constructions De Clichy, France

Continuation of Ser. No. 961,682, Nov. 17, 1978, abandoned. This application Jun. 18, 1980, Ser. No. 160,727
Claims priority, application France, Nov. 22, 1977, 77 34989
Int. Cl.³ B24B *5/04, 53/04*
U.S. Cl. 51—5 D **2 Claims**



1. A grinding machine for finishing a workpiece, the combination of:

a stationary table, a grinding wheel carriage, and grinding wheel carriage slideways formed between the table and said carriage operable to provide carriage movement relative to the table toward and away from the workpiece;

a grinding wheel, a sleeve, and a shaft carried by said grinding wheel carriage, said sleeve being rotatably supported on the shaft medially thereof and said grinding wheel being secured on the sleeve to rotate therewith;

a pair of supports on the grinding wheel carriage positioned directly above said grinding wheel carriage slideways and spaced apart in the direction of the workpiece, and said shaft having end portions beyond the sleeve cooperating respectively with said supports, means operable to rotatably drive the grinding wheel relative to the carriage;

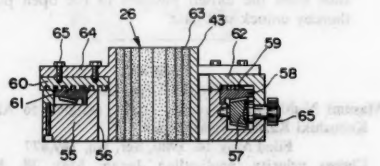
a dressing wheel, a dressing wheel carriage, means supporting said dressing wheel rotatably relative to the dressing wheel carriage, means operable to rotatably drive the dressing wheel relative to the dressing wheel carriage, and cooperating dressing wheel carriage slideways between the dressing wheel carriage and the grinding wheel carriage in a direction toward and away from said grinding wheel whereby the dressing wheel can be brought into operative engagement with the grinding wheel, said dressing wheel carriage slideways and said grinding wheel carriage slideways being generally aligned in direct vertical overhead relationship relative to one another and relative to said supports for said end portions of said shaft so as to minimize canting and deflection of the components relative one to another, said grinding machine further comprising a yoke casing, a rocker arm, and a side arm each distending from the yoke casing, securing means between the side arm and shaft holding them together, connection means between the rocker arm and the carriage at a location spaced from the supports operable to allow the yoke casing to be pivoted relative to the carriage between the operative position and an inoperative position whereat the shaft is removed and well spaced from the supports, and removable head pieces adapted to cooperate with the supports for holding the shaft relative to the supports in the operative position.

4,330,963

APPARATUS FOR GRINDING FINISH OF PISTON RINGS

Masahiko Wada, and Junji Shirogane, both of Kashiwazaki, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,424
Int. Cl.³ B24B *25/00*
U.S. Cl. 51—157 **1 Claim**



1. Apparatus for finish grinding of piston rings comprising:

a stationary body having a center hole,

pinion means rotatably carried on the body at a position radially outward from the center hole,

a scroll mounted on the body in engagement with the pinion means and having a spiral groove on the outer surface thereof,

carriers having rack means for engagement with the spiral groove,

guide means for sliding the carriers radially inwardly or outwardly when the scroll is rotated by the pinion means, and

T-shaped inner sleeve elements comprising grindstone or lapping means secured on the inner surface thereof and comprising radially outward extending arms on the outer surface thereof,

said outward extending arms being secured to said carriers and said sleeve elements being positioned within said center hole and forming a circle of selected diameter, whereby said diameter may be altered by actuation of said pinion means,

said sleeve elements and grindstone or lapping means secured thereon being of sufficient length to obtain a minimum stroke of the piston ring to be finished, said length

being greater than the width of said sleeve elements and grindstones or lapping means,

each said grindstone or lapping means having a longitudinal axis extending along the length thereof, said longitudinal axes being inclined in a circumferential direction with respect to said center hole of said body.

4,330,964

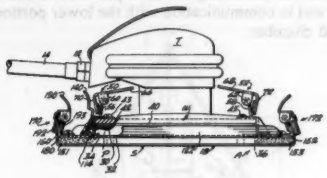
SANDING DEVICE

Evidio Martinez, 6875 Tamiami Canal Rd., Miami, Fla. 33126

Filed Apr. 14, 1980, Ser. No. 139,745

Int. Cl.³ B24B *23/00*

U.S. Cl. 51—170 MT **1 Claim**



1. In combination,

a hand-held orbital sanding tool having a working portion with a main planar generally rectangular working surface including a leading edge, trailing edge, and a pair of side edges, an elongated generally rectangular sandpaper strip having parallel side edges, and an adapter,

said adapter comprising (a) a generally rectangular tray having a floor portion with an upper and lower surface, first and second end edges and a pair of side edges, each having upstanding side walls and first and second upstanding walls spaced from said first and second end edges, respectively, thereby the walls defining a seat sized to mate compatibly with said rectangular sanding tool working surface portion in confronting relation to said floor, (b) a first and second releasable tool clip means for engaging said main planar surface, and (c) a first and second releasable sandpaper clip means,

said first sandpaper clip means being fixed on said floor adjacent said first end edge between said first wall and said first end edge,

said second sandpaper clip means fixed on said floor adjacent said second end edge between said second wall and said second end edge for releasable engagement of said sandpaper strip in covering relation to said adapter,

said first tool clip means comprising an upstanding member with a spring means having a terminal end with a pivot means for pivotal movement of a pair of spaced apart spring-loaded clamp arms, each clamp arm having a swingable portion movable into and out of clamping engagement with said working portion of said tool,

said first and second sandpaper clip means each comprising (a) an upstanding portion fixed to said floor, (b) a swingable arm with an upper, lower, and middle section such that said middle section connects to said fixed upstanding portion on a swivel and spring means, said lower section is forced to overlap said fixed upstanding portion and has padding fixed to an interface area where said spring means urges the clip in a captivating relation with respect to said sandpaper at said interface area, and said upper section is upstanding and curves away from said tray such that pressure applied in the direction of the seat will separate said lower section from said fixed upstanding portion and allow said sandpaper adjustment,

said floor lower surface having a pad,

said second cool clip means comprising (a) a pair of spaced and fixed ears which extend toward said seat from said second side wall at a height such that ears overlay said working surface of said sanding tool, and (b) a bolt and nut securing means to secure said second tool clip means to said floor where said floor has a pair of slots adjacent and spaced from said side wall and a predetermined distance from said second end edge, and wherein said second tool clip means has an aperture aligned with each slot and securing means for placement on said floor, thereby said second side wall may slide between said end edges creating an adjustable means for adapting said seat to various sized tool working surfaces,

said sandpaper clip means being adapted to releasably and clampingly engage the ends of the piece of sandpaper and hold the piece in covering relation to the pad on the lower surface of said floor member.

4,330,965

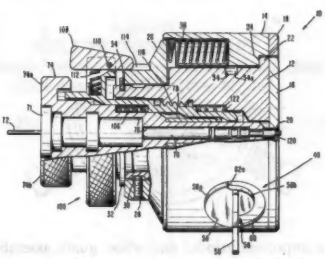
TOOL FOR OPTICALLY FINISHING CONNECTOR-MOUNTED OPTICAL FIBERS

Kenneth M. Clark, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 63,636, Aug. 3, 1979, abandoned. This application Jun. 2, 1981, Ser. No. 269,071

Int. Cl.³ B24B *41/06*

U.S. Cl. 51—217 R **16 Claims**



1. An adjustable optical fiber grinding and polishing tool capable of being held in an operator's hand comprising:

a body having means for supporting at least one fiber optic ferrule and its optical fiber and for positioning the ferrule and its fiber terminus at a surface on said body;

a housing surrounding said body and having a surface generally surrounding said body surface; and

means interconnecting said housing and said body for effecting relative movements of retraction and extension therebetween and including mechanism defining limits to the relative movements, respectively to place said body and housing surfaces in a coplanar position prior to grinding of the ferrule and its fiber terminus and to move said body surface into a position forward of said housing surface prior to said polishing of the ferrule and its fiber terminus.

4,330,966

GROOVE GRINDING FIXTURE

Frank Kadykowski, Sterling Heights, Mich., assignor to Dana Corporation, Toledo, Ohio

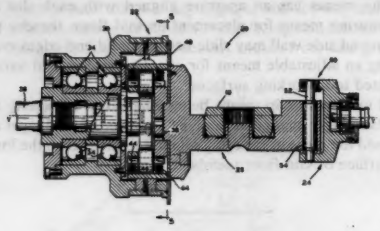
Filed Aug. 18, 1980, Ser. No. 179,208

Int. Cl.³ B24B *47/02*

U.S. Cl. 51—230 **12 Claims**

1. In a fixture for grinding pairs of oppositely positioned complementary grooves in a workpiece; an improvement comprising means to rotate said fixture for grinding said oppositely positioned grooves on offset centers in a single operation; said

means defining a fixed cam comprising two flat portions thereon, said flat portions imparting a reciprocal motion to said



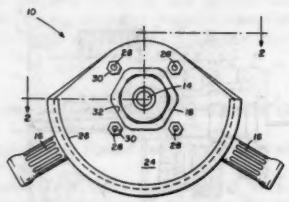
fixture during the rotation of said fixture, whereby said workpiece rotates between two distinct centers of rotation.

4,330,967

GRINDER AND WHEEL GUARDS THEREFOR

Victor E. Richardson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 9, 1980, Ser. No. 148,328
Int. Cl.³ B24B 55/04
U.S. Cl. 51—268 **10 Claims**



1. An improved grinder and wheel guard assembly wherein said grinder includes a housing, a rotatable output shaft journaled in the housing and having a shaft portion projecting therefrom, the shaft portion being arranged to carry a grinding wheel for rotation therewith, the improvement comprising:

a non-circular peripheral surface on the housing encompassing the output shaft;

a wheel guard member including a mounting hole sized and arranged to fit over said peripheral surface in essentially coterminous relationship thereto, whereby a load imposed on said guard member is transferred into the housing through said peripheral surface; and,

mounting means positioning said guard member on the housing.

4,330,968

TWO-TANK HIGH WATER PRESSURE WET BLASTING MACHINE WITH SEPARATE SUPPLY RESERVOIR FOR ABRASIVE PARTICLES

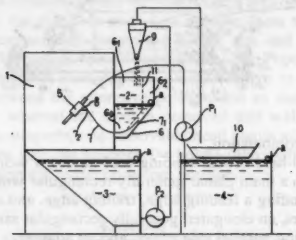
Shigeharu Kobayashi, Yokohama; Toshiyuki Takagi, and Chiaki Hayashi, both of Shizuoka, all of Japan, assignors to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed May 2, 1980, Ser. No. 146,541
Int. Cl.³ B24C 7/00
U.S. Cl. 51—425 **9 Claims**

3. In a wet blasting machine having means defining therein a blasting chamber, a blasting gun positioned within said chamber for discharging a slurry of liquid and abrasive particles against a workpiece, a reclaiming tank located below the blasting chamber for collecting therein the slurry, a clear liquid tank containing therein a quantity of clear liquid, means including a high pressure pump for supplying clear liquid to said blasting gun to create a jet stream which functions as the driving force for ejecting abrasive particles from said gun, and means for supplying a slurry containing abrasive particles to said gun, said slurry being sucked into said gun by a Venturi effect, the improvement comprising:

reservoir means for holding therein abrasive particles, said reservoir means being mounted at an elevation substantially above that of said reclaiming tank and at an elevation substantially at or above the elevation of the blasting gun;

said reservoir means having divider means therein for dividing the interior of same into an abrasive particle chamber and a liquid chamber, said divider means having opening means associated therewith for enabling the liquid level in both chambers to be the same, and said divider means adjacent the lower end of said reservoir means cooperating with the reservoir means to define a discharge opening or gate for permitting abrasive particles to collect adjacent and in communication with the lower portion of said liquid chamber;



said supplying means including suction pipe means extending between said blasting gun and said liquid chamber for permitting slurry to be withdrawn from said reservoir means and supplied to said blasting gun, said suction pipe means having one end thereof connected to said blasting gun and the other end thereof opening directly into said liquid chamber at a location spaced from the collection of abrasive particles in the bottom of said reservoir means for preventing blockage of said pipe means by said abrasive particles, said other end of said suction pipe means being disposed at an elevation approximately at the elevation of said blasting gun; and

said supplying means also including a liquid-solid separating device and means for supplying the slurry from said reclaiming tank to said separating device, the clear liquid as separated in said device being returned to the clear liquid tank, and the solid particles as separated by said device being supplied to said abrasive particle chamber of said reservoir means.

4,330,969

CONSTRUCTION PANEL

Patrick E. Quaney, Fountain Valley, Calif.

Continuation of Ser. No. 927,013, Jul. 24, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,414
Int. Cl.³ E04B 1/32
U.S. Cl. 52—81 **3 Claims**

1. A structural building module for use in the assembly of geodesic domes, comprising an intergrally molded panel module having:

(a) a triangularly shaped planar base portion;

(b) a continuous peripheral flange formed integrally with and about the entire triangular perimeter of said base portion, said flange extending upwardly on one side of the base portion to define a cavity in said panel module for receiving building insulation therein,

(i) the interior side of the flange being canted at a draft angle of approximately 3° from the perpendicular to said base portion,

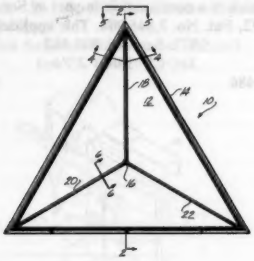
(ii) the exterior side of the flange being canted at a draft

angle varying from 0.5° to 5° from the perpendicular to said base portion to facilitate assembly of the panel module with adjacent panel modules in a flange-to-flange arrangement,

(iii) the interior side of said flange being stepped adjacent its upper edge to define a continuous shoulder extending peripherally of said cavity for receivably supporting a facing panel thereon to close said cavity, and

(iv) a plurality of apertures at predetermined intervals along the flange for receiving fastening means securing the panel module to adjacent modules;

(c) a boss formed integrally with said base portion and disposed centrally thereof, extending upwardly on said one side of said base portion,



(i) the outer surface of the boss being canted inwardly toward its upper edge, and

(ii) the upper edge of the boss abutting the plane defined by said continuous shoulder for receiving fastening means to secure the facing panel to the panel module; and

(d) three ribs formed integrally with said boss, said base portion and said flange, said ribs extending between the boss and each of the three apices defined by the flange with the base portion along the triangular periphery thereof, said ribs imparting strength and rigidity to said panel module.

4,330,970

BUILDING STRUCTURE AND STEEL PARTS FOR SAME

Johannes A. Bonink, Nederhorst den Berg, Netherlands, assignor to Copreal S.A., Fribourg, Switzerland

Filed Oct. 23, 1979, Ser. No. 87,564

Int. Cl.[3] E04H *1/00*; E04B *1/00*; E04C *3/26*

U.S. Cl. 52—125 **20 Claims**

1. A building structure having a frame, composed of prefabricated parts, comprising:

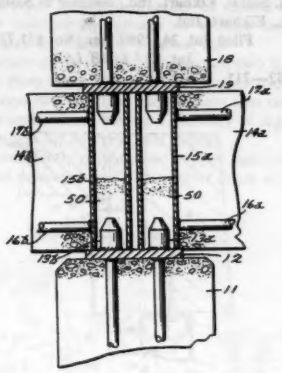
a plurality of slab-shaped floor or roof elements located one above the other;

a plurality of concrete support columns interconnecting the corners of said elements;

each column having a coverplate provided at the top end thereof and at least one bar having a given outside diameter projecting axially from the column top end;

at least one elongated tubular section having a predetermined inside diameter formed at each corner of each of said elements, and embedded within the element so that it extends at least to the top and bottom surfaces of the element;

said bars and tubular sections positioned with respect to each other and said elements and columns so that in the assembled condition a corner of an element covers approximately one quadrant of the head of a column, and the tubular sections transmit the weight of the elements to the columns and transmit the forces exerted by columns located in alignment with each other, with each bar received by a tubular section; and



the ratio of the inside diameter of a tubular section to the outside diameter of a bar with which it is associated being from 3:2 to 5:2.

4,330,971

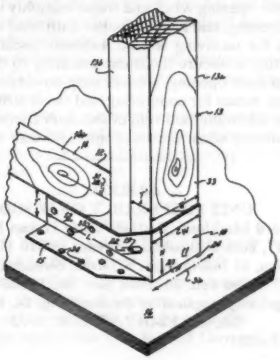
WALL FRAMING BRACKET

Earl J. Auberger, 10426 Lochcrest Dr., Cincinnati, Ohio 45231

Filed Aug. 4, 1980, Ser. No. 175,284

Int. Cl.[3] E06B *1/02*

U.S. Cl. 52—210 **7 Claims**



1. In combination, a building sub-floor, floor plates, and door framing studs defining a passageway through a partition wall, said door framing studs and floor plate being secured to said sub-floor by a wall framing bracket adapted to maintain alignment of said floor plate and door framing studs at floor level of said passageway,

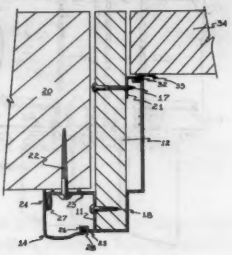
said bracket comprising two side arms aligned parallel one to the other and a base connected between said side arms, said side arms and base establishing a bracket of generally U-shaped configuration, and a foot flange attached to and extending outwardly from each of said side arms, said foot flanges being secured to said sub-floor and said U-shaped bracket embracing said floor plate and at least one of said door framing studs, and said bracket base being flush against said one of said door framing studs whereby said bracket serves to prevent transverse motion of said floor plate and framing stud relative to the plane of said partition wall.

4,330,972

DOOR JAMB ASSEMBLY

Vernon R. Sailor, Elkhart, Ind., assignor to Sailor Manufacturing Inc., Elkhart, Ind.

Filed Jul. 24, 1980, Ser. No. 171,731
Int. Cl.[3] E06B 1/04
U.S. Cl. 52—211 4 Claims



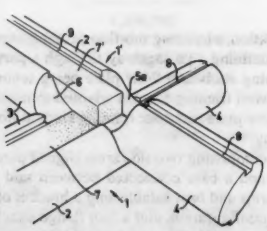
1. A preconstructed door frame assembly adapted for insertion into a door opening defined by an outlining wall structure, said frame assembly comprising a metal outer frame having a U-shaped part at one margin, said U-shaped part terminating in an outturned wall, a wooden inner frame member, one edge of said inner frame member fitting into said outer frame U-shape part with said outturned wall of the outer frame being located to project outwardly from the inner frame member, first fasteners securing said inner frame member to said outer frame, said frame member outturned wall and inner frame member adapted to overlie spaced portions of said wall structure defining said door opening when said frame assembly is inserted into the door opening, said frame member outturned wall constituting means for receiving second fasteners anchored into said wall structure to secure the frame assembly to the wall structure at said door opening, a cover strip co-extensive with said outer frame, means for connecting said cover strip to said outer frame over said outturned wall of the outer frame to cover said second fasteners when anchored into said wall structure.

4,330,973

UNIT PREFERABLY OF WOOD

Karl-Gerhard Marklund, Postlada 1290; Hakan Larsson, Postlada 1287, both of Bjurholm, Sweden (S-910 11), and Johnny Sandström, 11 Märtavägen, Själevad, Sweden (S-890 23)

Filed Jun. 20, 1980, Ser. No. 161,337
Claims priority, application Sweden, Aug. 24, 1979, 7907074
Int. Cl.[3] E04B 1/10; E04C 3/12
U.S. Cl. 52—233 12 Claims



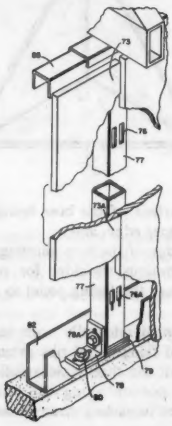
1. A log unit, preferably of wood, which in at least one end zone includes a portion (4,14) with full cross-section while the portion inside thereof (2, 3, 7, 2, 3, 7', 13) in section constitutes a part with half a cross-section, characterized in that the transition (5, 15) between the portion (4, 14) with full cross-section and the portion inside thereof consists of a recess (5*a*, 16*a*), which extends in the longitudinal direction of the unit (1, 1', 12) and in which the portion (4, 14) with full cross-section fits, and of a plane surface (5*b*, 16*b*), which in principle is one quarter of the cross-sectional area for the full cross-section and extends substantially perpendicularly to the longitudinal direction of the unit (1, 1', 12) and connects to the plane surface (17) of the portion (2, 13) with half a cross-section, and that the unit (1, 1', 12) is provided with groove and tongue (8, 9, 10, 18, 19, 20, 21) preferably along the entire length of the unit (1, 1', 12).

4,330,974

EASY-TO-ASSEMBLE STRUCTURE

William F. Fleisch, 126 Campbell Ave., Williston Park, N.Y. 11596, and Walter Pousche, 58-05 Metropolitan Ave., Brooklyn, N.Y. 11237

Continuation-in-part of Ser. No. 520,441, Nov. 1, 1974, Pat. No. 4,045,090, which is a continuation-in-part of Ser. No. 264,207, Jun. 19, 1972, Pat. No. 3,845,988. This application Aug. 29, 1977, Ser. No. 828,863
Int. Cl.[3] E04B 2/74
U.S. Cl. 52—486 10 Claims



1. An assembled structure comprising:

a supporting device containing therein wall means which defines an elongated slot and having also a first supporting surface and a second supporting surface in an angular relation with the first supporting surface;

a first structural member having a first contact surface engageable with the first supporting surface;

a second structural member having a second contact surface engageable with the second supporting surface so as to be adjacent to, and disposed in approximately the angular relation with, the first member; and

a hook on the first member and configured for insertion into the slot upon alignment with and for sliding along, the slot,

said slot having at its top a hook insertion portion narrowing down into a substantially narrower but parallel-sided, hook locking portion which has a substantially continuous and vertically elongated contact length,

said hook securing the first member in gravity-controlled, locking engagement with the slot on the supporting device;

the location of the second member in its intended position on the assembled structure preventing the disruption of the locking engagement of the first member with the slot on the supporting device;

the first and second structural members, together with the supporting device being so relatively dimensioned and positioned as to have therebetween operating clearances

so substantial that upon locating the second member in the intended position on the assembled structure and simultaneously upon aligning the hook with the slot, the hook is insertible into the slot and subsequently slidable therealong whereby the second contact surface on the second member is made to engage with the second supporting surface at substantially the same time the first contact surface on the first member is made to engage with the first supporting surface so that the locking engagement is achieved and the assembly of the structure is substantially instantly completed.

4,330,975

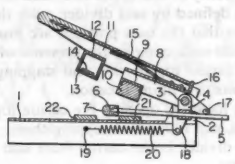
SIMPLIFIED VACUUM-PACKAGE SEALER APPARATUS

Kunio Kakiuchi, 19-117 12, Yamashiro-Onsen, Kagashi, Ishikawa-ken, Japan

Filed Aug. 5, 1980, Ser. No. 175,662

Int. Cl.³ B65B *31/06*

U.S. Cl. 53—79 **1 Claim**



1. A vacuum package sealer apparatus comprising an operation lever thereon carrying a heat plate for sealing an opening portion of a yieldable bag, a retention lever thereon carrying an elastomeric member for retaining the bag opening portion in a closed state, a conduit member having an opening at the distal end and a soft, porous cap member mounted on said distal end opening for evacuating the interior of said bag, a base plate having platen plate means and a pivot shaft positioned thereon, said operation lever, said retention lever and said conduit member being mounted around said pivot shaft for turning movement thereabout, said elastomeric member being in closer proximity to said pivot shaft than said heat plate, said distal end of said conduit member being positioned between said elastomeric member and said heat plate, a spring being interposed between said operation lever and said retention lever, whereby a first exertion of turning force to said operation lever causes said conduit member to be held initially between said elastomeric member and said platen plate means and a further exertion of turning force thereto causes the heat plate to become in contact with said platen plate means.

4,330,976

PACKING MACHINES

Victor G. Blackall, and Robert T. Daisley, both of London, England, assignors to Molins Limited, London, England

PCT No. PCT/GB89/00115, § 371 Date Feb. 21, 1980, § 102(e) Date Feb. 21, 1980, PCT Pub. No. WO80/00246, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 5, 1979, Ser. No. 190,523

Claims priority, application United Kingdom, Jul. 11, 1978, 29393/78

Int. Cl.³ B65B *19/04, 19/24*

U.S. Cl. 53—151 **13 Claims**

1. A packing machine for rod-like articles such as cigarettes, comprising:

a hopper for assembling articles into groups, each containing a predetermined number of articles;

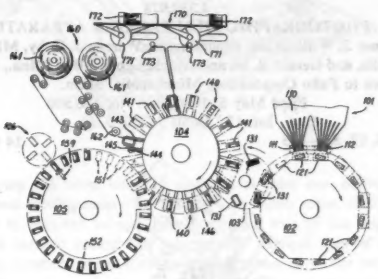
a rotatable member carrying a plurality of hollow mandrels at regularly-spaced positions around its circumference;

means for supplying packet blanks to each of said mandrels in succession and folding said blanks around said mandrels to form open-ended packets;

an endless conveyor having a plurality of spaced tubular pockets for transporting groups of articles from the hopper towards the rotatable member; and

a rotatable transfer drum for receiving groups two at a time successively from the pockets of the conveyor and inserting said groups two at a time successively into the mandrels, said transfer drum having a plurality of regularly-spaced chambers for carrying said groups;

means for intermittently driving said hopper, said rotatable member, said conveyor and said transfer drum so that:



said rotatable member at regular intervals moves through an angle equal to the angular spacing between the centres of adjacent mandrels;

said conveyor advances by a distance equal to twice the distance between the axis of one pocket and the axis of the next adjacent pocket at every second movement of the rotatable member;

said hopper delivers two groups of articles to respective pockets of the conveyor during each stoppage of the conveyor; and

said transfer drum is moved through an angle equal to twice the angular spacing between the centres of adjacent chambers for every two movements of said rotatable member.

4,330,977

APPARATUS FOR THE HEAT-SEALING OF PACK WRAPPERS AND THE LIKE

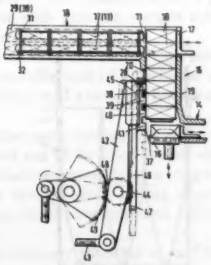
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 130,686

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910404

Int. Cl.³ B65B *51/14*

U.S. Cl. 53—379 **12 Claims**



1. An apparatus for the heat-sealing of surfaces of articles, in particular for the sealing of closing flaps of a wrapper of a

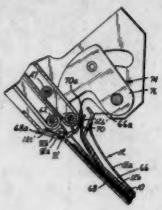
cuboid pack in a packaging machine in which packs are conveyed adjacent one another, comprising: a plurality of support means; at least one sealing jaw being mounted on each said support means; said support means being movably mounted to move said at least one sealing jaw mounted thereon in a direction perpendicular to a direction of conveyance of said packs; each said at least one sealing jaw having a plurality of sealing strips; and each said support means being further movably mounted and being moved in accordance with a state of an operating process of said apparatus to move selected ones of said sealing strips of each said at least one sealing jaw towards surfaces to be treated of said packs.

4,330,978

PHOTOGRAPHIC FILM PACKING APPARATUS

Armer J. Willenbring, Bloomington; Warren J. Osby, Minneapolis, and Gerald R. Strunc, Maple Grove, all of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed May 5, 1980, Ser. No. 146,508
Int. Cl.³ B65B *39/00, 5/10*
U.S. Cl. 53—435 **14 Claims**



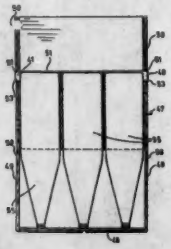
1. A method of inserting photographic film segments into an insertion opening of a package, the method comprising:
severing a first segment from a photographic film web;
advancing the web, while maintaining the first segment stationary, to partially overlap the first segment;
advancing the web and the first segment together in partially overlapping relationship;
severing a second segment from the web; and
conveying the first and second segments in partially overlapping relationship into the insertion opening.

4,330,979

SPACE DIVIDERS

Thomas J. Martin, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Division of Ser. No. 43,751, May 30, 1979, Pat. No. 4,226,357.
This application Jul. 14, 1980, Ser. No. 168,028
Claims priority, application Canada, Mar. 5, 1979, 322764
Int. Cl.³ B65B *21/14, 21/02*
U.S. Cl. 53—452 **1 Claim**



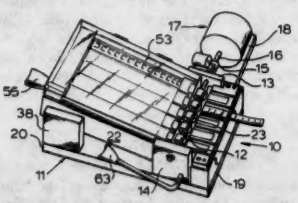
1. A method of handling and shipping bottle-like items having lower base portions of longer diameter and upper neck portions of smaller diameter, including the steps:
(1) providing a carton and space divider combination in which the carton is rectangular is section with four side walls, a closed base and an openable top portion, the divider having a depth less than the distance from the carton base to the carton top portion, and having partition members defining a plurality of partitioned spaces, including at least one main partition extending fully between two opposed side walls of the carton, the main partition having two projecting fingers, one at each end of the main partition, the said opposed side walls having (a) a first pair of apertures located so that the said fingers can register therewith when the divider is in a first position in the carton, and (b) a second pair of apertures aligned with but spaced from said first pair such that the divider can be moved to a second position to bring the fingers into registry with said second pair, the divider in the first position being adjacent the top portion of the carton, the divider in the second position being adjacent the base of the carton,
(2) placing the divider in the carton in said first position,
(3) loading a plurality of said bottle-like items into the carton in the spaces defined by said divider, with the neck portions down so that the base portions are protected from scraping against each other by the presence of the divider,
(4) closing the carton top portion and shipping the carton and its contents to a filling location,
(5) at the filling location, opening the carton top, removing the said items, and filling and capping them,
(6) moving the divider in the carton from said first to said second position,
(7) loading the filled and capped bottle-like items back into the container with the base portions down so that again the base portions are protected from scraping against each other by the presence of the divider, and
(8) closing the carton top portion for further shipment of the now filled bottle-like members.

4,330,980

APPARATUS AND METHOD FOR INSERTING STRIPS OF MICROFILM INTO MICROFILM JACKETS

Richard G. Bramley, Winnetka, and Thomas P. Anderson, Jr., Northbrook, both of Ill., assignors to Microseal Corporation, Zion, Ill.

Filed Apr. 18, 1980, Ser. No. 141,627
Int. Cl.³ B65B *5/10*
U.S. Cl. 53—473 **17 Claims**



1. A method of feeding pre-cut, individual microfilm strips into lateral channels of a microfilm jacket, each channel having a lip edge adjacent a lateral side of said jacket and an inwardly disposed channel opening adjacent said lip edge, comprising:
supporting said jacket on a platform such that said lip edges are adjacent a lateral side edge of said platform,
directing at least one microfilm strip along a chute means having a lead edge facing said platform side edge such that a lead end of said strip abuts with the lip edge of one said channel,
rotating a feed roll means about an axis parallel with said lead and side edges and disposed therebetween, and
moving said platform side edge toward said feed roll means

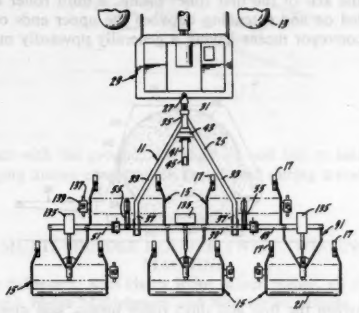
to bring said strip lead end into driving contact with said feed roll means and away from said feed roll means to permit said strip lead end to be initially disposed in engagement with said lip edge.

4,330,981

TOWABLE GANGED MOWER

George E. Hall, Des Plaines, and Jack Carr, Glenview, both of Ill., assignors to Roseman Mower Corporation, Glenview, Ill.

Filed Mar. 4, 1981, Ser. No. 240,571
Int. Cl.³ A01D 75/30
U.S. Cl. 56—7 12 Claims



1. A ganged mower frame of the type which is towed by a vehicle, said frame including:

a center cross bar, a right hand cross bar and a left hand cross bar,

each of the right and left hand cross bars being pivotally connected to the opposite ends of the center cross bar for rotation about a horizontal axis,

a tow bar having a pivotal connection at its forward end for attachment to a towing vehicle and attachment means at its rear for rigid connection to the center cross bar,

a pair of forwardly extending mower support arms, each support arm being pivotally mounted for rotation about a horizontal axis on the center cross bar near the ends thereof,

a mower mounting bracket attached to the forward end of each forwardly extending mower support arm with each bracket attached to its arm for rotation about the longitudinal axis of its arm,

at least one rearwardly extending mower support arm pivotally mounted for rotation about a horizontal axis on each of the center cross bar and right and left hand cross bars,

a mower mounting bracket attached to the rear end of each of the rearwardly extending mower support arms with each bracket mounted for rotation about the longitudinal axis of its mower support arm, and

hydraulic piston and cylinder means mounted on the center and right and left hand cross bars for lifting said mower mounting brackets relative to the cross bars for transportation.

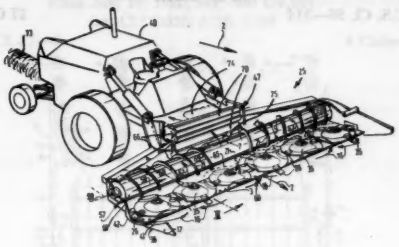
4,330,982

MOWING DEVICE

Hermanus H. Vissers, and Pieter A. Oosterling, both of Nieuw-Vennep, Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Oct. 15, 1980, Ser. No. 197,189
Claims priority, application Netherlands, Oct. 19, 1979, 7907731
Int. Cl.³ A01D 43/00
U.S. Cl. 56—192 17 Claims

1. A mowing device comprising a frame extending transversely of the direction of movement of the mowing device, cutting members supported by said frame and being rotatably mounted on said frame so as to rotate about substantially vertical shafts by means of a driving gear carried by said frame, said cutting members having knives rotating in a horizontal plane and at least one swath former comprising a worm rotor adapted to rotate about a horizontal axis transverse of the direction of movement and being journalled on the frame and



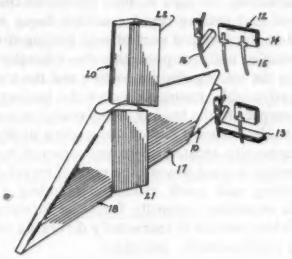
conveying the crop laterally towards at least one delivery place and driving means for driving said worm rotor, characterized in that the substantially horizontal axis of the worm rotor is located behind the substantially vertical axes of the cutting members and in that the driving means drive the worm rotor in a sense such, that the worm rotor moves upwards at the front side.

4,330,983

FLOATING DIVIDER FOR A HARVESTER

Paul J. Moore, Garfield, Wash., assignor to J. E. Love Company, Garfield, Wash.

Filed Dec. 1, 1980, Ser. No. 211,693
Int. Cl.³ A01D 41/12, 45/22, 63/04
U.S. Cl. 56—314 5 Claims



1. A floating crop divider attachment for a harvester having a transverse frame with opposite upright side walls, said attachment comprising:

an upright narrow fixed divider having a rear end adapted to be fixed to one side wall of a harvester as a longitudinal extension thereof and extending outwardly to a forward end;

a movable divider snout overlapping and pivotally mounted to the forward end of the fixed divider about a transverse axis and extending forwardly as a longitudinal extension thereof; said divider snout having smooth upright side walls merging into a forwardly and downwardly inclined upper edge;

and an upright chimney mounted to said fixed divider and extending upwardly therefrom at a location longitudinally aligned with and upwardly adjacent to the movable divider snout;

said chimney and movable divider snout having complimen-

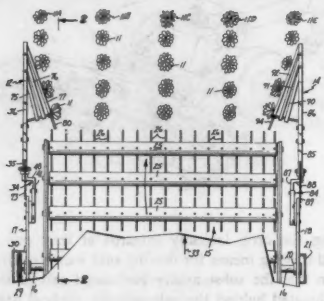
tary adjacent edges each centered about said transverse axis.

4,330,984

CROP DIVIDER ASSEMBLY

De Lloyd F. Hillmann, 246 W. 6th St., Gibbon, Minn. 55335

Filed Oct. 3, 1980, Ser. No. 193,488
Int. Cl.[3] A01D *63/00*
U.S. Cl. 56—314 27 Claims



1. A crop divider assembly mountable on a combine header to divert peripherally located crops into the path of travel of the combine header for harvesting, comprising: arm means adjustable in length having one end fixed to header structure and another end extended forwardly from the header structure; a trailing divider section having a first frame and a first vertically disposed sheet member spanning the area defined by the first frame; means pivotally connecting a rear portion of the frame of the trailing divider section to the outer end of the arm means for pivotal movement in a vertical plane; a leading divider section having a second frame and a second sheet member spanning the area defined by the second frame; the rear part of said leading divider section being telescopically assembled to the forward part of said trailing divider section and adjustable with respect thereto whereby the length spanned by the leading divider section and the trailing divider section is adjustable; means to secure the leading divider section with respect to the trailing divider section; a guide assembly fixed to the forward end of the leading divider section to guide peripherally located crops encountered by the leading divider section inward toward the path of travel of the header for harvesting, said guide assembly including a plurality of guide rods extending inwardly from the forward end of the leading divider section in rearwardly diverging relationship in a fan-type configuration.

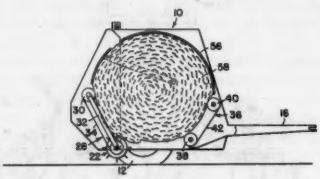
4,330,985

MACHINE FOR ROLLING HAY INTO CYLINDRICAL BALES

Joseph J. Shindelar, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 11, 1975, Ser. No. 585,851
Int. Cl.[3] A01D *75/00*
U.S. Cl. 56—341 4 Claims

1. A machine for removing crop material from the ground and rolling it into large cylindrical bales comprising: a mobile frame having generally vertical fore and aft extending sides, an axially transverse elevated pivot means, and a rear gate structure mounted on the pivot means for swinging between a lower operating position and a raised discharge position; means mounted on the frame for swinging the rear gate structure between its alternate positions; an axially transverse rotary pickup means journaled on the frame between the opposite frame sides and adapted to engage crop material and raise it from the ground as the machine advances; a first roller means journaled on the rear gate structure between the opposite sides, and associated with the pickup means; a second roller means extending between the opposite sides forwardly of the first roller means and spaced above the ground so that the crop material passes beneath the second roller means before engagement by the pickup means, the second roller means cooperating with the first roller means to support a bale above the ground after it reaches a size wherein the bale diameter is greater than the distance between the first and second roller means, the pickup means feeding the crop generally upwardly between the first and second roller means after the bale is supported on said roller means; a pair of arms having their lower ends swingably mounted on the frame for swinging about the axis of the first roller means; a third roller means journaled on and extending between the upper ends of said arms; conveyor means having a generally upwardly moving



run between the first and third roller means, said upwardly moving run being inclined forwardly to engage the upper rear portion of a bale in the early stages of the bale formation, the arm means swinging rearwardly so that the upwardly moving run of said conveyor means is more vertical as the bale increases in size; a fourth roller means extending between the opposite frame sides generally above the level of the second roller means, said conveyor means including a downwardly moving run between the fourth and second roller means that supports the forward side of the bale as it is being formed off the ground; and drive means operatively connected to the pickup means and the conveyor means so that the pickup means feeds crop material generally upwardly into a baling chamber above the first and second roller means after the bale reaches a larger diameter than the distance between the first and second roller means, while the bale is being rotated by the conveyor means.

4,330,986

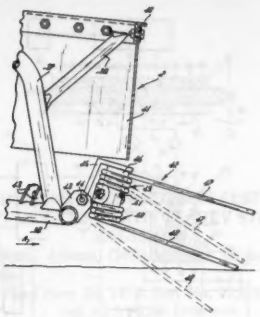
RAKING MACHINES

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Filed Oct. 22, 1980, Ser. No. 199,555
Claims priority, application Netherlands, Oct. 23, 1979, 7907777; Jan. 18, 1980, 8000327; Aug. 27, 1980, 8004832
Int. Cl.[3] A01D *78/14*
U.S. Cl. 56—377 24 Claims

1. A raking machine movable over the ground comprising at least one tined rake member rotatable about an upwardly and forwardly extending axis and driving means connected to rotate said member about said axis, tines pivotably mounted adjacent the outer perimeter of the rake member and said tines with mountings being freely pivotable outwardly to operative positions about generally horizontal axes responsive to centrifugal forces during rotation, each tine being inclined rearwardly in its operative position with respect to a plane that contains the axis of rotation and the pivot point of the tine mounting to the rake member, the center of gravity of said tine mounting being located outwardly from said pivot point during rotation and said tine extending downwardly from that point towards the ground during at least the major part of the rearmost 180° sector of its rotational path, said tine being positioned to contact the ground and rake crop for at least the

major part of the foremost 180° sector of its path, said tine being pivotable upwardly about said pivot point responsive to



contact with the ground, the angle of said tine to said plane changing during contact with the ground during travel.

4,330,987

MULTI-SPINDLE DOUBLE TWIST TWISTING MACHINE

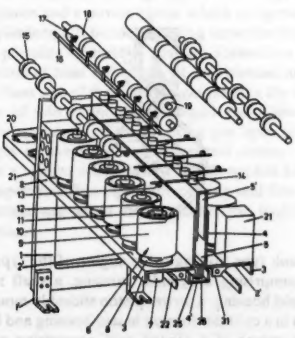
Heinz Schippers; Karl-Heinz Rehn; Klaus Weber, all of Remscheid; Heinz Middelmann, and Karl-Heinz Schulte, both of Radevormwald, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik A.G., Remscheid, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,393

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925643; Jun. 26, 1979, 2925644; Jun. 26, 1979, 2925668; Jun. 26, 1979, 2925697; Jun. 28, 1979, 7918471[U]

Int. Cl.³ D01H *1/16, 1/18*

U.S. Cl. 57—1 R **35 Claims**



1. A spindle frame for supporting a plurality of spindle assemblies in multi-spindle double twist twisting machines of the type having vertical frame stands at the ends of sections of the machine, said spindle frame comprising a support plate formed for mounting spindle assemblies thereon, a plurality of spindle assembly mounting means on said plate for mounting spindle assemblies thereon with whorl portions of said spindle assemblies projecting in freestanding arrangement from one side of said plate and yarn supporting portions of said spindle assemblies projecting in freestanding arrangement from the other side of said plate, said support plate having longitudinal ends for mounting of said plate in the vertical frame stands at the ends of a machine section without intermediate support as a self-supporting subframe mountable alternatively in either a machine of the type in which the spindle assemblies are disposed with the axes vertical or a machine of the type in which the spindle assemblies are disposed with their axes horizontal.

4,330,988

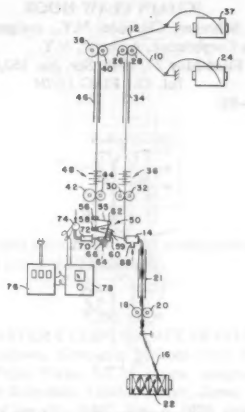
METHOD OF FORMING A SLUB YARN

Paul W. Eschenbach, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 16, 1980, Ser. No. 159,691

Int. Cl.³ D02G *1/20, 3/34*

U.S. Cl. 57—6 **4 Claims**



1. A method of making a slub yarn having a core yarn and an effect yarn comprising the steps of: feeding the core yarn at a first pre-determined rate in excess of 200 meters/minute to a yarn feed rate changing apparatus, simultaneously feeding the effect yarn to the yarn feed rate changing apparatus at a second pre-determined feed rate which is higher than the first predetermined rate, supplying the core yarn and the effect yarn from the feed rate changing apparatus to a tangling zone to form a composite yarn, randomly actuating the yarn feed rate changing apparatus to abruptly and randomly reduce the rate of feed of one of the yarns while simultaneously allowing the rate of feed of the other yarn to increase as it as being supplied to the tangling zone to form randomly spaced slubs in the composite yarn in a substantially non-repetitive pattern and withdrawing the composite yarn from the tangling zone at a third pre-determined rate.

4,330,989

FALSE-TWIST-TEXTURED SYNTHETIC POLYMER FILAMENT YARN

Heinrich Schmieder, and Rolf Heider, both of Emmenbrucke, Switzerland, assignors to Viscosuisse S.A., Emmenbrucke, Switzerland

Filed Jun. 9, 1980, Ser. No. 157,704

Claims priority, application Switzerland, Jun. 7, 1979, 5297/79

Int. Cl.³ D02G *3/38, 3/04*

U.S. Cl. 57—227 **9 Claims**

1. False-twist-textured filament yarn of synthetic polymers, comprising a core filament group and a sheath filament group

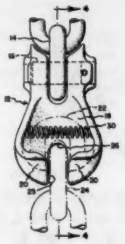
on the outside of and partially wrapped around the core, the two groups of filaments being produced from the same or different polymers, characterized in that the sheath filament group comprises at least two filament components, the smaller component of the sheath filament group including fibrils with the coarsest fibril denier and the larger component of the sheath filament group including fibrils with the finer fibril denier, and the finer fibrils of the sheath filament group having finer fibril denier than the fibrils of the core group.

4,330,990

CHAIN CLAW HOOK

Kenneth D. Schreyer, Clarence, N.Y., assignor to Columbus McKinnon Corporation, Amherst, N.Y.

Filed May 27, 1980, Ser. No. 153,042
Int. Cl.³ F16G *15/04*
U.S. Cl. 59—93 **10 Claims**



1. In a chain link coupling device of the type including a body member having at its opposite ends means for engaging separate chain links; and in which said body member is provided at least at one of its ends with a claw type chain link engaging means; and wherein said engaging means comprises a pocket portion having spaced apart claws formed integral with and extending forwardly from said body member separated by an open slot therebetween; said pocket portion being adapted to engage therein a chain link when disposed transversely of said slot, while also accommodating in freely suspended relation within said slot the next adjacent link to said engaged chain link;

an improved user-releasable latch means preventing unintended separations of the engaged chain link from said pocket portion while also facilitating intended manually performed separations thereof; said improved latch means comprising in combination with said body member;

a bridge abutment portion formed integrally with said body member and joining said claws and capping said slot, said abutment portion disposed overhead the next adjacent link of a chain whenever an engaged link is residing in said pocket portion and located adjacent a crown region of said next adjacent link behind a vertical center line thereof for nonyielding abutment therewith in response to upward movement thereof; and

a resilient barrier device anchored to said body member within said pocket portion thereof and extending transversely of said pocket portion and located above the crown region of and slightly ahead of the vertical center line of said next adjacent link when said next adjacent link is disposed in said slot.

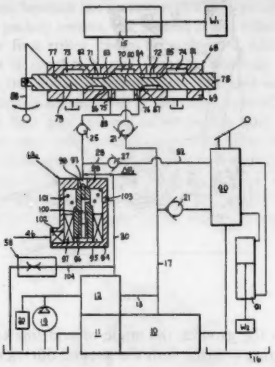
4,330,991

LOAD RESPONSIVE SYSTEM CONTROLS

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Jan. 2, 1980, Ser. No. 109,053
Int. Cl.³ F15B *13/02*
U.S. Cl. 60—427 **56 Claims**

1. A load responsive fluid control system comprising a pump having an output flow control and a fluid motor subjected to load pressure, control orifice means interposed between said pump and said motor, a control means of said output flow control operable to maintain a pressure differential acting across said control orifice means constant at a predetermined



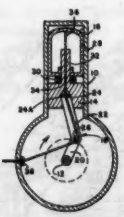
level, said control means having means operable to vary the level of said pressure differential proportionally in response to a control signal while said pressure differential is maintained constant at each controlled level.

4,330,992

DRIVE MECHANISM FOR STIRLING ENGINE DISPLACER AND OTHER RECIPROCATING BODIES

James R. Senft, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Apr. 11, 1980, Ser. No. 140,127
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—518 **25 Claims**



12. In a crank type Stirling cycle engine of the type having a first part comprising a cylinder housing, a shaft rotatably mounted to said housing, a power piston slideably mounted for reciprocation in a cylinder formed in said housing and linked to said shaft by means of a second part comprising a linkage means for converting reciprocating motion to rotary motion and a displacer piston slideably mounted in a cylinder formed in said housing, the improvement comprising an apparatus for driving said displacer at the same frequency but out of phase with said power piston and comprising:

(a) a biasing means linked to said displacer for applying a bias force upon said displacer urging it in one direction of its reciprocation; and

(b) a flexible band, secured at a place along its length to said displacer and extending in a direction for applying a force on said displacer opposite to said biasing force and secured at another place along its length to an anchor mounted on one of said parts of said apparatus, said band extending slideably across at least one bearing surface intermediate its secured places, said bearing surface formed on still

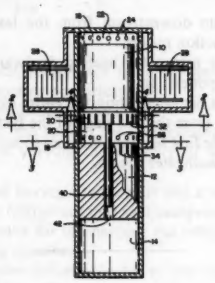
another part of said apparatus which is different from the part to which the band is secured.

4,330,993

HYDRODYNAMIC LUBRICATION SYSTEM FOR PISTON DEVICES PARTICULARLY STIRLING ENGINES

William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Nov. 26, 1979, Ser. No. 97,409
Int. Cl.³ F02G 1/04
U.S. Cl. 60—520 6 Claims



1. In a free piston Stirling engine of the type having a displacer piston and a power piston which reciprocate in cooperating cylinders, a lubrication aiding structure comprising:

(a) a plurality of turbine surfaces formed on and arranged around at least a first one of said pistons; and

(b) at least one of the working gas ports in the wall of at least one of said cylinders positioned and formed to direct a flowing stream of the working gas upon said surfaces to apply an average torque upon said piston;

wherein a turbine effect results which applies an average spin torque upon said first piston for causing said first piston to spin and entrain gas about its perimeter for hydrodynamic gas lubrication.

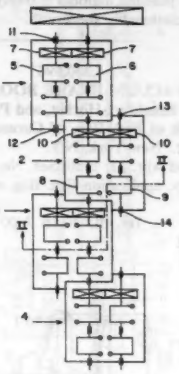
4,330,994

DOUBLE-ACTING HOT GAS ENGINE ASSEMBLAGE

Nils K. G. Rosenqvist, Malmö, Sweden, assignor to Kommanditbolaget United Stirling AB & Co., Malmö, Sweden

Filed Nov. 5, 1979, Ser. No. 91,038
Int. Cl.³ F02G 1/04
U.S. Cl. 60—525 3 Claims

1. A double-acting hot gas engine assemblage comprising a plurality of engine units each of which having two parallel interconnected crank shafts being influenced by a plurality of pistons activated by pressure variations of hot gas charges characterised in that one crank shaft of each unit is coaxially connected to a crank shaft of another unit and that the other



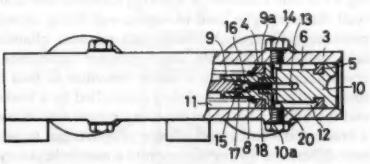
crank shafts of said units are mounted at alternating sides of the interconnected crank shafts.

4,330,995

MASTER CYLINDER APPARATUS

Yoshitaka Miyakawa, Kawagoe; Makoto Sato, Kamifukuoka, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,837, Feb. 6, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,914
Claims priority, application Japan, Feb. 16, 1978, 53-17729[U]
Int. Cl.³ B60T 11/20
U.S. Cl. 60—562 2 Claims



1. A master cylinder apparatus of the type wherein a master cylinder is in communication through a connecting port with an oil reservoir on its upper side, and is provided therein with a piston having at its front and rear surfaces respective elastic cups, whereby the piston may be pushed to advance against the action of a spring on its front side by a push rod, wherein: the piston comprises a front main piston and a rear subsidiary piston connected thereto having an axially extending return port communicating between front and rear oil chambers and with a check valve interposed in said return port, said check valve being arranged to be closed by action of a spring, and said check valve being arranged to be held open when said valve is supported by a stopper from the rear side thereof, said check valve comprising a ball valve, and the same is contained in a valve chamber formed in said main piston and is urged toward its closing side by said spring on its front side and is provided on its rear side with a T-shaped pushing member for pushing the same toward its opening side, said pushing member being arranged to be brought into engagement through a washer on its rear side with said stopper provided behind the washer and wherein said stopper comprises a bolt screwed in the side wall of said cylinder, said subsidiary piston being made smaller in diameter at a front end portion and being mounted at said portion in an axial bore made in the rear surface of the

main piston, said washer being freely movable on said smaller diameter portion of said subsidiary piston in floating relationship therewith, said front end portion having a slit made therein, and said pushing member is freely movable within said slit in floating relationship therewith.

4,330,996
VACUUM BRAKE BOOSTER

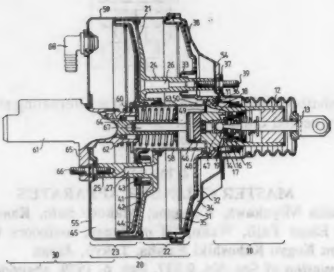
Reimund Becht, Frankfurt-Höchst, and Peter Böhm, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,829

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918914

Int. Cl.³ F15B *7/00*

U.S. Cl. 60—581 **26 Claims**



1. A brake booster for a motor vehicle comprising:

a vacuum casing having a longitudinal axis;

two booster units disposed in said casing coaxial of said axis in a tandem relationship, each of said booster units including a vacuum chamber, a working chamber and a movable wall therebetween, said movable wall being moved by a pressure difference between said vacuum chamber and said working chamber, said pressure difference being controllable by a control valve common to said booster units, said control valve being controlled by a brake pedal and including a force transmitting means which combines a brake pedal force and a force proportional to said pressure difference for transmission to a master brake cylinder; and

a partition wall disposed in said casing coaxial of said axis separating said axis separating said booster units, said partition wall having first means to fasten said booster to said vehicle and second means to fasten said master brake cylinder to said booster, said first means being staggered with respect to said second means about said axis to provide a cooperative structural relationship with said partition wall to reduce the axial length of said booster and to stiffen said partition wall to enable said partition wall to transmit said forces without deformation thereof.

4,330,997
FEEDWATER HEATING IN A STEAM TURBINE

Alfred Schwarzenbach, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Oct. 31, 1979, Ser. No. 89,891

Claims priority, application Switzerland, Nov. 9, 1978, 11523/78

Int. Cl.³ F01K *7/34*

U.S. Cl. 60—678 **11 Claims**

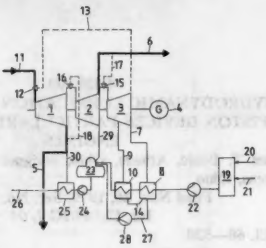
1. An apparatus for feedwater heating in a steam turbine plant without a condenser component comprising:

at least a first turbine component having at least one stage;

extraction means for extracting process steam for industrial purposes from at least the last stage of the first turbine component;

means for withdrawing a portion of the steam from the process steam downstream from the last turbine stage having extraction means;

a further turbine component having at least one stage for expanding the portion of the steam withdrawn from the



process steam downstream from the last turbine stage having extraction means;

first feedheater means for heating feedwater for the first turbine component; and

first line means for conducting the entire expanded portion of the steam from the last stage of the further component directly to the first feedheater means to heat the feedwater in the first feedheater means.

4,330,998
LIQUEFIED NATURAL GAS-FREON ELECTRICITY GENERATION SYSTEM

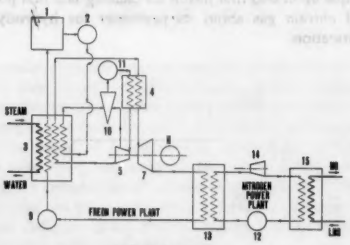
Reikichi Nozawa, 2-10-38 Ohokayama, Meguroku, Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,735

Claims priority, application Japan, Dec. 29, 1977, 52/159500

Int. Cl.³ F01K *23/04*

U.S. Cl. 60—655 **24 Claims**



1. A method of generating power utilizing a refrigerant as the working fluid and for limiting the temperature of the refrigerant below its decomposition range of temperature, the method including the steps of circulating the refrigerant in a closed circuit through a storage tank, a compressor, a heating means, a gas turbine, and a condensing means, characterized in that the refrigerant, after passing through a high-pressure gas turbine (5), is reheated and is then passed through a low-pressure gas turbine (7).

4,330,999
REFRIGERANT COMPRESSOR

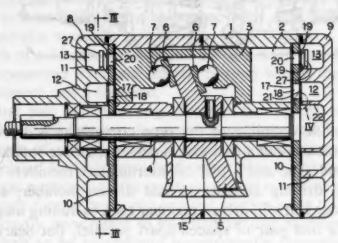
Shozo Nakayama, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Continuation of Ser. No. 922,730, Jul. 7, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,726

Claims priority, application Japan, Jul. 27, 1977, 52-100526; Jul. 27, 1977, 52-100527

Int. Cl.³ F25B *31/00*

U.S. Cl. 62—217 14 Claims



1. A refrigerant compressor for a refrigerating system including an evaporator comprising:

at least one compressing chamber;

a compressing mechanism for compressing the refrigerant by means of varying the capacity of said compressing chamber;

a suction valve having a valve port and a valve element for sucking the refrigerant into said compressing chamber;

a discharge valve for discharging the refrigerant from said compressing chamber;

a sensing member deformable due to lowering of the suction pressure of the refrigerant caused by the variation of the operative condition of said refrigerating system; and

control means, installed within said compressor and actuated by the deformation of said sensing member, for reducing the flow passage area for the refrigerant at the valve port of said suction valve in response to the suction pressure lowering to reduce automatically the suction amount of the refrigerant to said compressing chamber for preventing excessive lowering of the temperature in the evaporator to induce the frosting on the outer surface of said evaporator, while the pressure of the refrigerant is maintained high immediately upstream, and decreased at, the valve port of said suction valve, whereby the refrigerant is prevented from uselessly absorbing heat owing to temperature lowering caused by expansion thereof.

4,331,000
APPARATUS FOR COOLING HEATED THERMOPLASTICS YARNS

Walter Lüthi, Ebnat Kappel, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland

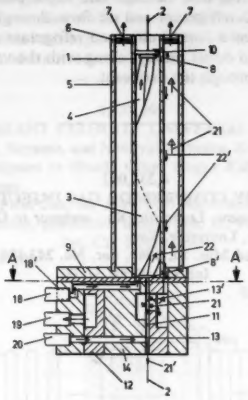
Filed Oct. 15, 1980, Ser. No. 197,207

Claims priority, application Switzerland, Oct. 15, 1979, 9256/79

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—374 6 Claims

1. Apparatus for cooling heated textile yarn formed of thermoplastics material, comprising an inner coolant tube, a cylinder with a spiral peripheral yarn groove positioned coaxially within said inner tube, means for guiding the yarn to travel along said groove, means for passing a coolant fluid along said groove, an outer tube surrounding and spaced from the inner tube, and a supporting member at the yarn inlet end of the inner tube, including a control valve having coolant supply and discharge passages, and an air supply passage, and a yarn threading groove along which the yarn passes, extending in the direction of the axis of the inner coolant tube, the valve being



arranged to cover or uncover the yarn groove according to its position.

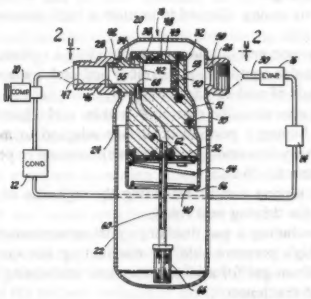
4,331,001
ACCUMULATOR-DEHYDRATOR ASSEMBLY FOR AN AIR CONDITIONING SYSTEM

Joe W. Jones, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1981, Ser. No. 262,189

Int. Cl.³ F25B *43/00*

U.S. Cl. 62—503 3 Claims



1. In an accumulator-dehydrator assembly for an air conditioning system wherein refrigerant and oil and possibly water are circulated, a casing having a top and a bottom and an inlet for receiving refrigerant and oil and an outlet for discharging same, a container supported in said casing adjacent the top thereof, said container containing a desiccant exposed to the interior of said casing, a vapor passage having an inlet located within the desiccant in said container and an outlet connected to said casing outlet, said container having an exterior forming a baffle in the path of said casing inlet to stimulate separation of the incoming refrigerant and oil into liquid and vapor components whereby the vapor components stratify about said container while the liquid components collect on the bottom of said casing and whereby all of the vapor components in said casing are forced to pass through said desiccant and thence said vapor passage to said casing outlet allowing the desiccant to effectively adsorb any water entrained therein, and a restricted liquid passage having an inlet located adjacent the

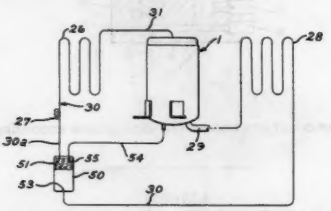
bottom of said casing and an outlet connected to said vapor passage at a point intermediate said vapor passage's inlet and outlet whereby the flow through said vapor passage induces restricted liquid refrigerant and oil flow through said liquid passage and thence limited atomized refrigerant and oil flow out through said outlet passage along with the vapor components passing through the desiccant.

4,331,002

ROTARY COMPRESSOR GAS INJECTION

William T. Ladusaw, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 12, 1981, Ser. No. 243,174
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—505 **7 Claims**



1. A refrigeration system including a condenser, an evaporator, an expansion control means dividing said system between a low and high pressure side and a hermetically sealed rotary refrigerant compressor for forming a closed refrigeration circuit comprising;

a hermetic casing adapted to contain a high pressure refrigerant gas;

a compressor unit in said casing including a cylinder having an annular compression chamber and end walls enclosing the ends of said annular chamber;

a rotor eccentrically rotatable within said chamber, said rotor having a peripheral surface adapted to move progressively into sealing relation with successive portions of said annular chamber;

a motor having a shaft extending through one of said end walls for driving said rotor;

means including a gas discharge port communicating with said high pressure side for conducting hot compressed refrigerant gas for said chamber into said casing and then to said condenser;

means including a gas suction port communicating with said low pressure side for conducting gaseous refrigerant from said evaporation outlet to said chamber;

refrigerant collecting means arranged in the low pressure side at the inlet to said evaporator being dimensioned for separating gaseous uncondensed refrigerant from liquid condensed refrigerant;

means for injecting said uncondensed gaseous refrigerant into said annular chamber including a gaseous refrigerant injection port being positioned to be covered and uncovered by said rotor during rotation thereof;

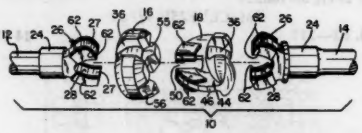
a refrigerant gas supply means communicating at one end with said refrigerant collecting means and at the other end with said refrigerant gas injection port for conducting uncondensed gas refrigerant when present to said injection port for discharge into said chamber when the pressure in said chamber is less than the pressure in said collecting means so as to prevent back flow of compressed refrigerant into said collecting means.

4,331,003

FLEXIBLE COUPLING

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Jul. 26, 1979, Ser. No. 61,062
Int. Cl.³ F16D *3/22*
U.S. Cl. 464—76 **4 Claims**



1. In a flexible coupling of the type comprising a driving member rotatable about a first axis, a driven member rotatable about a second axis; and a pair of intermediate members for coupling said driving member to said driven member; said driving member and said driven member each including means for defining a first pair of spaced-apart parallel, flat bearing surfaces; said intermediate members including means for operatively connecting said driving member to said driven member; each of said intermediate members including means defining a second pair of spaced-apart parallel, flat bearing surfaces and means defining a third pair of spaced-apart parallel, flat bearing surfaces, each of said first pair of bearing surfaces being associated with a different one of said second pairs of bearing surfaces so that each bearing surface of a first pair is disposed in a mutually confronting parallel relation and opposite to a respective bearing surface of a second pair, and the third pair of bearing surfaces of one of said intermediate member being associated with the third pair of bearing surfaces of the other of said intermediate members so that each bearing surface of one third pair is disposed in a mutually confronting parallel relation and opposite to a respective bearing surface of the other third pair, the improvement comprising:

elastomeric bearing means for coupling (1) each of the bearing surfaces of the first pair of said driving member to a different bearing surface of the second pair of one of said intermediate members, (2) each of the bearing surfaces of the first pair of said driven member to a different bearing surface of the second pair of the other of said intermediate members, and (3) each of the bearing surfaces of a third pair of one of said intermediate members to a different bearing surface of the third pair of the other of said intermediate member;

wherein said bearing means comprises a plurality of elastomeric bearing units each comprising a plurality of alternate layers of resilient and nonextensible materials bonded one to another and disposed between and engaging corresponding oppositely disposed ones of said bearing surfaces, all of said being units have substantially equal torsional spring rates and substantially equal angular spring rates, and all of said bearing units are compressed in response to a torque load applied to said driving member about said first axis and move in shear in response to axial misalignment or axial displacement of said driving or driven members about said respective first and second axes.

4,331,004

ANGULAR MISALIGNMENT COUPLING

Richard Schmidt, 11525 Islandale Dr., Cincinnati, Ohio 45240

Filed Dec. 17, 1979, Ser. No. 104,060
Int. Cl.³ F16D *3/70*
U.S. Cl. 464—69 **21 Claims**

1. A coupling for uniformly transmitting torque from a first shaft to a second shaft while accommodating angular and/or axial misalignment between the axes of said first and second shafts, said coupling comprising:

a first annular member having means for fixedly securing the

same to the first shaft for rotation therewith about an axis of rotation coincident with the axis of the first shaft,

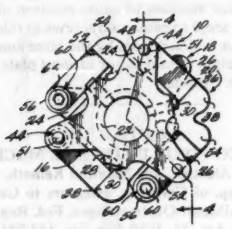
a second annular member having means for fixedly securing the same to the second shaft for rotation therewith about an axis of rotation coincident with the axis of the second shaft,

a third intermediate member having an axis of rotation aligned with the axes of rotation of said first and second annular members when the axes of the latter are aligned,

said intermediate member including an annular portion disposed between said first and second annular members and first and second pairs of elongated generally parallel arm portions operatively associated with said first and second annular members respectively,

each of said arm portions including a fixed end fixedly interconnected with said annular portion within the axial extent thereof and a free end,

a first pair of connecting elements fixedly projecting axially from said first annular member and connected with the free ends of said first pair of parallel arm portions at positions related to the longitudinal extent of said first pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque fixedly transmitted to said first annular member by the first shaft to be transmitted longitudinally through one of said first pair of arm portions to said annular portion under tension without longitudinal material displacement and through the other of said first pair of arm portions to said annular portion under compression without longitudinal material displacement while (1) enabling through transverse material



flexure of said first pair of arm portions the following relative motions of said annular portion with respect to said first annular member (A) an angular movement about an axis extending in a first transverse direction generally perpendicular to the longitudinal extent of said first pair of parallel arm portions and (B) an axial movement, and (2) preventing by transverse material rigidity of said first pair of arm portions a relative motion of said annular portion with respect to said first annular member which consists of a parallel linkage type substantially rectilinear movement in said first transverse direction, and

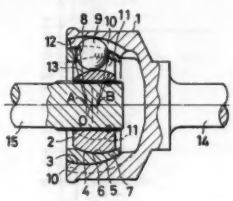
a second pair of connecting elements projecting axially from said second annular member and connected with the free ends of said second pair of parallel arm portions at positions related to the longitudinal extent of said second pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque transmitted to said annular portion to be transmitted longitudinally through one of said second pair of arm portions to said second annular member under tension without longitudinal material displacement and through the other of said second pair of arm portions to said second annular member under compression without longitudinal material displacement while (1) enabling through transverse material flexure of said second pair of arm portions the following relative motions of said annular portion with respect to said second annular member (A) an angular movement about an axis extending generally in a second transverse direction generally perpendicular to the longitudinal extent of said second pair of parallel arm portions and said first transverse direction and (B) an axial movement and (2) preventing by transverse material rigidity of said second pair of arm portions a relative motion of said annular portion with respect to said second annular member which consists of a parallel linkage type substantially rectilinear movement in said second transverse direction.

4,331,005

CONSTANT VELOCITY UNIVERSAL JOINT

Seiichi Hirai, Sayama, and Nobuyuki Otsuka, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,390
Claims priority, application Japan, Jan. 31, 1979, 54-9946[U]
Int. Cl.³ F16D *3/30*
U.S. Cl. 464—145 **10 Claims**



1. A constant velocity universal joint comprising an outer member having an inner spherical surface, an inner member fitted in said outer member and having an outer spherical surface facing said inner spherical surface of the outer member, said inner and outer members being adapted for relative angular travel about a center of the joint, a cage interposed between said inner and outer members, said cage having an outer spherical surface in contact with the inner spherical surface of the outer member and an inner spherical surface in contact with the outer spherical surface of the inner member, said cage having windows therein, and balls disposed in said windows and projecting outwardly therefrom, said inner and outer members being provided with respective opposed ball grooves in which said balls are engaged and are adapted to travel when the inner and outer members undergo relative angular movement, said ball grooves having respective bottom surfaces in said inner and outer members, said bottom surfaces in the inner and outer members extending along arcs which have respective centers offset on opposite sides of the center of the joint, said inner and outer spherical surfaces of said cage and the respective contact surfaces of said inner and outer members having respective centers also offset on opposite sides of said center of the joint, the combination of (1) the offset of the centers of the bottom surfaces of the grooves in the inner and outer members and (2) the offset of the centers of the inner and outer spherical surfaces of the cage being such that the balls remain engaged over the full depth of said grooves for substantially the entire extent of relative angular travel of said inner and outer members without undergoing substantial radial shifting in the windows of said cage.

4,331,006

SHOCK ABSORBER ASSEMBLY

Thomas R. Bishop, Houston, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

Filed Jul. 1, 1980, Ser. No. 165,200
Int. Cl.³ F16D *3/06*; E21B *17/00*
U.S. Cl. 464—18 **11 Claims**

1. A shock absorber assembly for use with a drill string having working fluid therein, comprising:

a housing formed having a central bore therethrough;

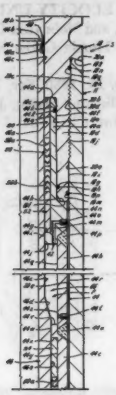
said housing having an upper housing portion, an intermediate housing portion and a lower housing portion;

said upper housing portion affixed to the drill string and in communication with the working fluid;

said intermediate housing portion having an intermediate bore of a greater inside diameter than said central bore;

a mandrel mounted with said housing for reciprocal longitudinal movement with respect to said housing;

said mandrel having a mandrel bore in communication with said central bore for permitting flow of working fluid therethrough; and,



fluid dampening means for absorbing shocks between said mandrel and said housing, said fluid dampening means having a working fluid bore therethrough for permitting flow of the working fluid therethrough, said fluid dampening means replaceably sandwiched between said upper housing portion and said mandrel within said intermediate bore of said intermediate housing portion.

4,331,007

CIRCULAR KNITTING MACHINE WITH A DEVICE FOR ADJUSTING THE STROKE OF THE CYLINDER NEEDLES

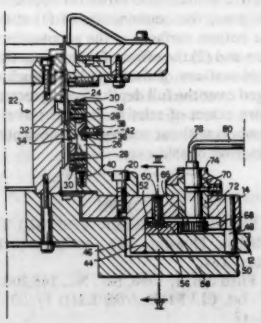
Giovanni Marchisio, Turin, Italy, assignor to Giovanni Marchisio & C. S.a.s., Turin, Italy

Filed May 4, 1978, Ser. No. 902,633

Claims priority, application Italy, May 18, 1977, 68131 A/77

Int. Cl.³ D04B *15/32*

U.S. Cl. 66—55 **7 Claims**



1. A multiple-feed circular knitting machine, including:

a frame;

an upright-axis needle cylinder rotatably mounted in said frame;

a plurality of needles mounted in the periphery of said cylinder for vertical sliding movement;

a cam-support ring coaxially surrounding said needle cylinder, said ring being constrained against rotation and subdivided into a plurality of sectors;

cam means supported by each of said sectors for controlling said vertical movement of said cylinder needles;

an annular base plate fixed to said frame coaxially with said needle cylinder;

an annular sector support plate coaxially surrounding said needle cylinder, said support plate being vertically slidable with respect to said frame; constraint means constraining said support plate against rotation with respect to said frame, said support plate being located above said base plate and defining an annular gap between the support plate and the base plate;

a rotatable setting ring located in said annular gap and supported coaxially with and on said base plate;

a plurality of wedge-shaped blocks detachably secured with equi-angular spacing, onto said rotatable setting ring, each of said blocks having an inclined upper face, said inclined upper faces having equal slopes in the same circumferential direction;

a plurality of equi-angularly spaced screws each of which is engaged in a respective vertical threaded-through hole in the support plate and bears on the inclined upper face of one of said blocks for adjustably supporting said sector support plate on said rotatable setting ring through said blocks;

and common control means which are operable from the exterior of said machine to cause rotation of said setting ring in either sense to cause said screws to ride up or down said respective inclined faces by the same amount in order to vary the height of said sector support plate with respect to said needle cylinder.

4,331,008

THREAD CONTROL IN TEXTILE MACHINES

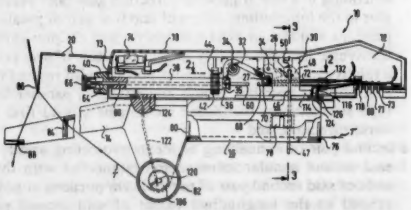
Heinrich Kürner, Albstadt, and Manfred Keinath, Burladingen, both of Fed. Rep. of Germany, assignors to Gebrueder Frei GmbH & Co., Albstadt-Onstmettingen, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,021

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936581

Int. Cl.³ D04B *35/12, 35/14*

U.S. Cl. 66—163 **9 Claims**



1. A thread monitor for use with textile machines, particularly knitting machines, comprising a thread brake for running thread; a knot sensor for detecting knots in the thread; means for detecting a loss of tension in the running thread, comprising a thread-engaging tension arm, a cam turnable to and from an activated position in which it interrupts an electrical circuit of the textile machine, a coupling element coupling said tension arm with said cam so that displacement of the tension arm from a monitoring position to an indicating position effects turning of said cam to the activated position thereof and spring means urging said tension arm to said monitoring position; said knot sensor including a sensing arm mounted for turning movement so as to be entrained when it encounters a knot in the running

thread, a cam element coupled with said sensing arm and movable between a rest position and an operating position, an omega spring normally maintaining said cam element in said rest position but snapping it into said operating position in response to entrainment of said sensing arm, a thread baffle justaposed with a portion of said sensing arm with the thread being required to pass therebetween, and means for varying the distance between said portion and said thread baffle; and means for returning said sensing arm to said rest position thereof, said returning means including a slidable plunger engageable from the exterior of the monitor and operative for pushing against said sensing arm.

4,331,009
JACQUARD ATTACHMENT FOR A WARP KNITTING MACHINE

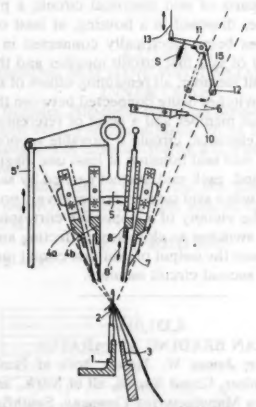
Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,088

Claims priority, application Switzerland, Jun. 15, 1979, 5615/79

Int. Cl.³ D04B *23/00, 27/00*

U.S. Cl. 66—203 **10 Claims**



1. A jacquard attachment for a warp knitting machine, said attachment comprising

guide means including an array of slot-like eyes for guiding jacquard yarns therein, each said eye having a length in a shogging direction equal to one or more needle spacings; and

a comb disposed above said guide means for reciprocation in said shogging direction to engage and move selected ones of the jacquard yarns sideways in said eyes.

4,331,010
DOT PRINTER

Mathias Mitter, Falkenstrasse 57, 4815 Schloss Holte, Fed. Rep. of Germany

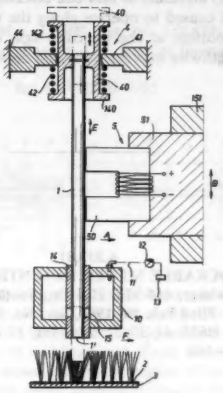
Continuation of Ser. No. 964,783, Nov. 28, 1978, Pat. No. 4,254,643. This application Sep. 12, 1980, Ser. No. 186,591

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753295

Int. Cl.³ D06B *1/08*

U.S. Cl. 68—200 **21 Claims**

1. In a dot printer, a combination comprising a plurality of adjacent printing plungers; means mounting said plungers for reciprocation in a working direction along respective upright paths; means normally retaining each of said plungers in a stationary neutral rest position; drive means, including a drive element located laterally adjacent to and separate from said plungers and oscillating continuously in said working direction along said paths between respective end positions; and a plurality of selectively activatable couplers arranged on said oscillating drive element separately from said plungers and said mounting means, said couplers being each operative for coupling, when activated, one of said plungers to said drive element while the latter oscillates so that the thus coupled one plunger is reciprocated by the drive element until the respective coupler is subsequently deactivated and said one plunger returns to the neutral rest position thereof.



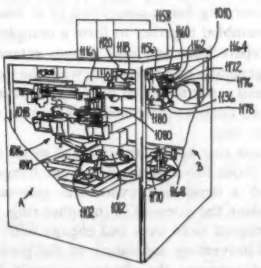
4,331,011
AUTOMATIC ROUGHING MACHINE

Richard M. Elliott, Beverly; Salvatore R. Provanzano, Melrose, and Gordon V. Sprague, Jr., Danvers, all of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 10, 1980, Ser. No. 158,149

Int. Cl.³ C14B *1/44, 17/14;* B24B *19/00*

U.S. Cl. 69—6.5 **32 Claims**



1. A machine for performing a roughing operation progressively along marginal portions of shoe bottoms comprising a shoe support, tool supporting means, means for effecting relative movement, lengthwise of the bottom of a shoe supported by the shoe support, between said shoe support and the tool supporting means first in one direction and then in an opposite direction, and means, operable as relative lengthwise movement takes place as aforesaid, for effecting relative movement, widthwise of the bottom of a shoe supported by the shoe support, between said shoe support and the tool supporting means, whereby, in the operation of the machine, a roughing operation can be progressively performed along marginal portions of such shoe bottom, wherein the tool supporting means is arranged to support two radial roughing tools for operating along opposite marginal portion of the shoe bottom,

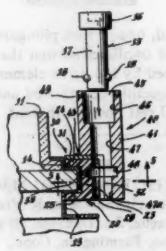
each tool being caused to effect an in-wiping action on the marginal portion on which it is caused to operate, and further wherein, in a cycle of operation of the machine, one of said tools is caused to operate along the marginal portion of the shoe bottom at one side thereof during relative lengthwise movement as aforesaid in said one direction, and the other of said tools is caused to operate along the marginal portion of such shoe bottom at the opposite side thereof during said relative lengthwise movement in said opposite direction.

4,331,012

LOCKABLE METER RETENTION RING

James A. Swisher, 464 Mill Hill Dr., Southport, Conn. 06490

Filed Feb. 19, 1980, Ser. No. 122,753
Int. Cl.³ B65D *45/30, 55/14;* F16L *37/08;* G01R *11/04*
U.S. Cl. 70—164 **22 Claims**



1. A lockable meter retention ring assembly for securing an electric meter to an associated meter box, the assembly comprising an inner ring, a metal outer ring, and a lock enclosure,

(A) the inner ring being comprised of at least two arcuate parts assembled together to form a complete ring having spaced apart front and rear flanges extending inwardly from a generally cylindrical sidewall, the inner ring defining at least a portion of an opening for receiving locking means and the inner ring being adapted for engaging with the outer ring,

(B) the outer ring being fabricated of metal and having an annular front for covering the front flange of the inner ring and a depending cylindrical sidewall for closely surrounding the sidewall of the inner ring, the outer ring being adapted to fit over and engage with the inner ring thereby preventing separation of the parts of the inner ring and retaining the electric meter in the associated meter box and

(C) the outer ring carrying a lock enclosure having an opening which defines, with the opening in the inner ring, the opening for receiving the locking means and for retaining the locking means when it is locked, the locking means securing the outer ring and inner ring together for preventing disassembly of the outer ring from the inner ring, wherein the locking means is a barrel lock of the type having a head, shank, and expansible locking balls, and the opening receiving the locking means is shaped and dimensioned to receive the barrel lock and to retain it when the balls are in the expanded position.

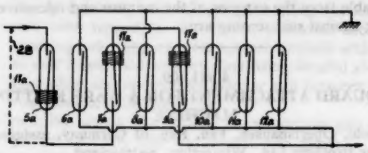
2. The lockable meter retention ring assembly as defined in claim 1 wherein the inner ring and outer ring are engaged together by means of screw threads.

4,331,013

ANTI-THEFT DEVICE

Christian Jaulmes, Pantin, France, assignor to Ateliers de la Motobecane, Pantin, France

Filed Mar. 12, 1980, Ser. No. 129,733
Claims priority, application France, Mar. 13, 1979, 79 06360
Int. Cl.³ E05B *49/00*
U.S. Cl. 70—278 **25 Claims**



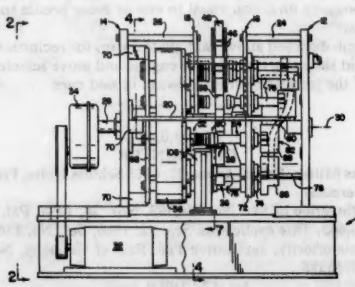
1. An anti-theft device for a vehicle having an internal combustion engine provided with an electrical circuit, the device comprising: a first circuit member having an output; a second circuit member having an input, said first and second circuit members being parts of said electrical circuit; a plurality of magnetic switches disposed in a housing, at least one of said magnetic switches being electrically connected in series between the output of said first circuit member and the input of said second circuit member, all remaining others of said plurality of magnetic switches being connected between the input of said second circuit member and a point of reference (ground) potential of said electrical circuit; a movable support adapted to be introduced into said housing; at least one magnet carried on said support and, each said magnet carried by said support being positioned when said support is operatively positioned in said housing in the vicinity of a respective corresponding one of said magnetic switches to close same effecting an electrical connection between the output of said first circuit member and the input of said second circuit member.

4,331,014

CAN BEADING APPARATUS

Stanley J. Miller; James W. Jensen, both of Hastings, and Richard J. Heniser, Grand Rapids, all of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Feb. 29, 1980, Ser. No. 125,832
Int. Cl.³ B21D *51/26*
U.S. Cl. 72—93 **38 Claims**



1. Apparatus for peripherally beading the side wall of a cup-shaped metal can body having open and closed ends comprising, a frame, can body supporting beading spindle means having a spindle axis and axially arranged first and second inner beading tool means, means for supporting and moving said spindle means and a can body supported thereby in a given direction along an arcuate path relative to said frame, said

arcuate path having a second axis parallel to and radially spaced from said spindle axis, means to rotate said beading spindle means and a can body supported thereby about said spindle axis during movement of said beading spindle means and can body along said path, and first and second outer beading tool means corresponding respectively to said first and second inner beading tool means and supported on said frame to extend sequentially in said given direction along said path, said first inner and outer beading tool means and said second inner and outer beading tool means being cooperable during movement of said spindle means along said path to sequentially form first and second peripheral bead means in the wall of said can body, said second bead means being between said first bead means and the open end of said can body.

4,331,015

TUBE BENDING MACHINE WITH AXIALLY MOVABLE INNER CORE

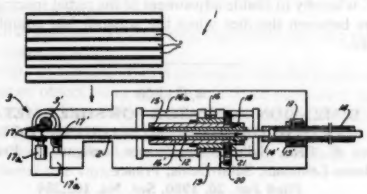
Hubertus Benteler, Bielefeld; Wolfgang Streubel, Barntrup, and Egon Olszewski, Paderborn-Elsen, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,832

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910183

Int. Cl.³ B21D *9/05*

U.S. Cl. 72—133 **7 Claims**



1. In a tube bending machine with an inner mandrel, a combination comprising tube bending means; a tube magazine located at one side of said tube bending means for containing a plurality of parallel tubes to be bent; a depositing station located laterally of said tube bending means at the other side of the latter; gripping and transfer means for moving said tubes seriatim from said magazine to said tube bending means with a front portion of the respective tube located in said tube bending means and a rear portion thereof projecting rearwardly beyond said tube bending means, said gripping and transfer means being constructed for holding the respective tube parallel to the tubes in said magazine during the movement of the tubes from said magazine into said tube bending means; and means for moving said inner mandrel in axial direction through said portion into the tube after the front portion of the tube has been placed into said tube bending means and for moving said inner mandrel out of said rear portion of said tube after the front portion of the tube has been bent by said bending means, said gripping and transfer means serving also for transferring the bent tube into said depositing station after said mandrel has been withdrawn from the rear portion of the tube.

4,331,016

TUBE BENDING APPARATUS WITH ELONGATED INNER MANDREL

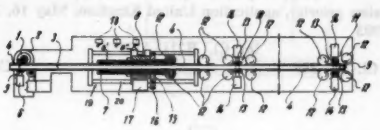
Hubertus Benteler, Bielefeld; Wolfgang Streubel, Paderborn, and Egon Olszewski, Paderborn-Elsen, all of Fed. Rep. of Germany, assignors to Benteler-Werke A.G., Paderborn, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,833

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2908996

Int. Cl.³ B21D *9/05*

U.S. Cl. 72—133 **10 Claims**



1. A tube bending apparatus comprising a mandrel having a front end and a rear end and a length at least three times the length of the tubes to be bent in the apparatus; tube bending means in the region of said front end of said mandrel; a pair of mandrel clamping means, one in the region of the rear end of the mandrel and the other forwardly spaced from said one clamping means by a distance slightly greater than the length of a tube for alternatingly clamping said mandrel; a slide movable in axial direction of said mandrel and located between said tube bending means and said other mandrel clamping means; collet means carried by said slide for clamping a tube surrounding the mandrel in the region of the rear end of the tube a portion of which is engaged by said tube bending means to be bent thereby; and a plurality of transport rollers between said rear end of said mandrel and said slide for transporting tubes surrounding the mandrel rearwardly of the slide into the latter.

4,331,017

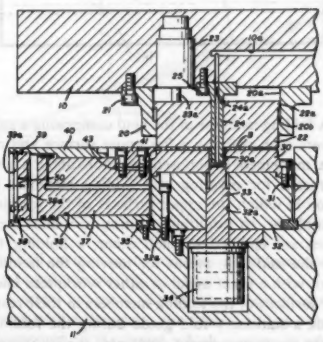
HIGH REDUCTION PROCESS AND APPARATUS

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Joseph Bulso, Jr., Canton, Ohio

Filed Dec. 11, 1980, Ser. No. 215,527

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—350 **7 Claims**



1. A method for high reduction metal forming comprising the steps of:

(A) clamping a blank of material between movable and fixed members of a press;

(B) forcing a forming horn against one face of said material and into a female die; and

(C) simultaneously applying radially inwardly directed pressure against the edge surfaces of said blank of material

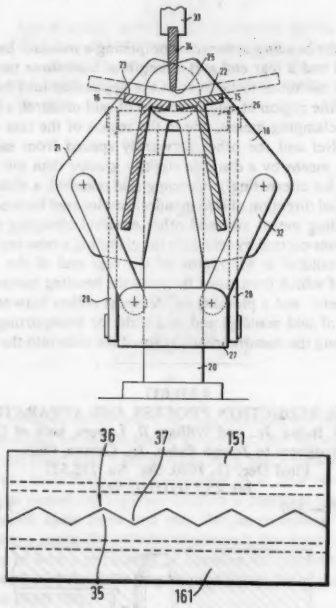
(1) whereby compressive force is applied to the periphery of said blank.

4,331,018

FOLDING MACHINE

John B. Doyle, Rotherham, England, assignor to Keeton Sons & Co. Ltd., Sheffield, England

Filed May 6, 1980, Ser. No. 147,425
Claims priority, application United Kingdom, May 16, 1979, 7917003
Int. Cl.³ B21D *5/01*
U.S. Cl. 72—389 2 Claims



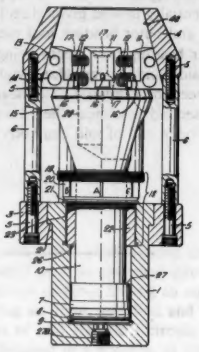
1. A folding machine of the kind comprising a pair of folding members each defining a flat upper surface and mounted for pivotal movement in opposed directions about a common pivot axis, means for pivoting said folding members from a rest position in which the upper surfaces of the forming members are co-planar, to a folding position in which the said upper surfaces are inclined to each other; a holding tool located above the said axis; means for moving the holding tool into contact with a sheet metal or other workpiece laid across the upper surfaces of the folding members in their rest position to provide a stationary fold guide during the folding operation wherein the improvement comprises the provision of projections extending from the opposed edges of the folding members which are interengaged with complimentary recesses formed in said edges, the upper surfaces of said projections being co-planar with the upper surfaces of the respective folding members, whereby, in use, the projections and recesses are in their interengaged relationship with one another in the rest position of the folding members and during initial pivotal movement of said members towards the folding position.

4,331,019

DEVICE FOR CRIMPING TUBULAR ELEMENTS

John L. Smith, Bedford, England, assignor to Andrew Hydraulics International Limited, Bedford, England

Filed Oct. 12, 1979, Ser. No. 84,124
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—402 6 Claims



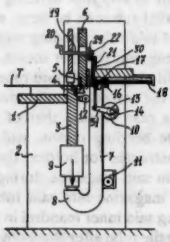
1. A crimping device comprising a plurality of dies disposed round an axis, camming means for driving the dies toward the axis by a camming action so that an article between the dies can be crimped, a hydraulic actuator for causing axial relative movement between the dies and the camming means, said actuator having an output member, said output member extending through a threaded bore, and an annular adjusting member encircling said output member and threadedly mounted in said threaded bore so as to selectively positionable in the axial direction, the output member including abutment means positioned to contact the adjusting member at the end of the stroke of the actuator, the adjusting member thus forming a stop defining an end-of-stroke position of the hydraulic actuator, whereby to enable adjustment of the radial spacing which exists between the dies when the actuator has completed its stroke.

4,331,020

DIMENSION INDICATOR FOR SHEET-METAL FOLDING OR SHEARING MACHINE TOOLS

Pierre G. Cros, Saint-Cloud, France, assignor to Promecam Sisson-Lehmann, Saint-Denis, France

Filed Jun. 26, 1980, Ser. No. 163,384
Claims priority, application France, Jul. 5, 1979, 79 17458
Int. Cl.³ B21D *11/22*
U.S. Cl. 72—461 7 Claims



1. A dimension indicator adapted to be mounted on a sheet-metal working machine tool having a metal working tool whose position determines a reference plane and having means for moving said tool to change the position of said working plane and having an adjustable sheet-positioning stop member

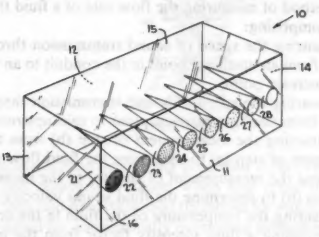
for positioning sheet metal in a predetermined position relative to said reference plane, said indicator comprising means to measure and display the distance of said adjustable sheet-positioning stop member from said reference plane, and means responsive to changes in position of the reference plane as a result of changes in position of said tool, to correct the display of said distance.

4,331,021

CONTRAST RESOLUTION TISSUE EQUIVALENT ULTRASOUND TEST OBJECT

Hector Lopez, Kensington, and Stephen W. Smith, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,381
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—1 DV **8 Claims**



1. A tissue-equivalent phantom for diagnostic ultrasound scanners, comprising:

a block of material having a tissue-equivalent acoustic velocity characteristic;

a plurality of contrast objects embedded into the block, each contrast object being made from a tissue-equivalent material and having a different reflectivity from the reflectivity from all others of said contrast objects, said contrast objects having at least one dimension along which its cross-sectional size varies.

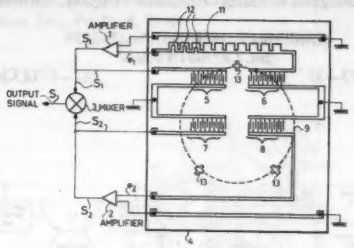
4,331,022

SENSOR USING TWO TUNABLE OSCILLATORS CONNECTED TO A FREQUENCY MIXER COMPRISING A DEVICE FOR CALIBRATING THE FREQUENCY OF THE OUTPUT SIGNAL AND A PROCESS FOR CALIBRATING THIS FREQUENCY

Gerard Coussot, and Pierre Hartemann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 28, 1980, Ser. No. 173,013
Claims priority, application France, Jul. 27, 1979, 79 19427
Int. Cl.³ G01L *25/00, 7/08*
U.S. Cl. 73—4 R **7 Claims**

1. A sensor of the type having two delay lines comprising transducers carried by a first face of a common support and subjected to stresses in opposite directions; said delay lines being furthermore connected by connection circuits to appropriate electric circuits so as to form two loops each constituting an oscillator producing signals, respectively at a first and a second frequency, intended to be mixed so as to produce an output signal at a third frequency, said sensor comprising a calibration device formed by at least one additional delay line



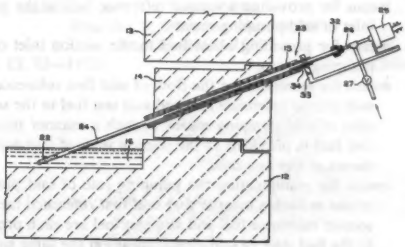
adjustable by laser machining or by sandblasting, inserted in said connection circuits of one of said oscillators.

4,331,023

ADDITION AND MEASUREMENT OF GASES DISSOLVED IN MOLTEN METALS

Ties Allersma, Pittsburgh, and James E. Simpson, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 968,604, Dec. 11, 1978, Pat. No. 4,239,532.
This application Mar. 10, 1980, Ser. No. 129,138
Int. Cl.³ G01N *7/00, 27/26*
U.S. Cl. 73—19 **11 Claims**



1. A method of measuring the amount of at least one gas dissolved in a liquid comprising the steps of:

providing a probe having a unitary outer wall to define a passageway within the probe, the outer wall has a portion to be submerged in the liquid which portion is substantially permeable with respect to the at least one gas but substantially impermeable to the liquid containing the at least one gas and has the remaining wall portion substantially impermeable with respect to both the at least one gas and liquid;

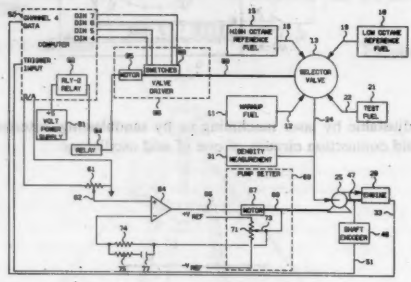
submerging at least the permeable outer wall portion of the probe in the liquid having the at least one gas; and

measuring gas pressure in the probe to monitor gas passing through the permeable outer wall portion of the probe.

4,331,024
OCTANE NUMBER MEASURING SYSTEM

W. Ves Childs, and Herbert N. Coyner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 8, 1980, Ser. No. 147,888
Int. Cl.³ G01N *33/22*
U.S. Cl. 73—35 12 Claims



1. Apparatus for determining the octane number of a test fuel comprising:

an engine means having a fuel inlet;

a pumping means having a suction inlet and a discharge outlet;

means for providing fuel from the discharge outlet of said pumping means to the fuel inlet of said engine means;

means for providing a first reference fuel to the suction inlet of said pumping means;

means for providing a second reference fuel to the suction inlet of said pumping means;

means for providing a test fuel to the suction inlet of said pumping means;

means for manipulating the flow of said first reference fuel, said second reference fuel and said test fuel to the suction inlet of said pumping means in such a manner that only one fuel is provided to the suction inlet of said pumping means at any one time;

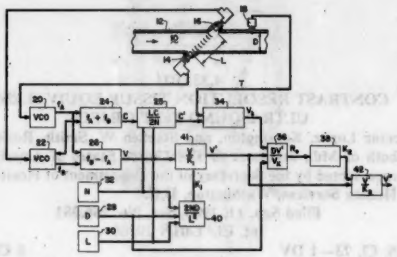
means for manipulating the pumping rate of said pumping means in such a manner that said first reference fuel, said second reference fuel and said test fuel are each provided to the fuel inlet of said engine means at the same substantially constant mass flow rate which results in substantially maximum knocking conditions when each of said first reference fuel, said second reference fuel, and said test fuel are flowing to said engine means; and

means for establishing a first signal representative of the rate of change of the cylinder pressure in said engine means when said first reference fuel is flowing to the fuel inlet of said engine means, for establishing a second signal representative of the rate of change of the cylinder pressure in said engine means when said second reference fuel is flowing to the fuel inlet of said engine means, and for establishing a third signal representative of the rate of change of the cylinder pressure of said engine means when said test fuel is flowing to the fuel inlet of said engine means.

4,331,025
METHODS OF MEASURING FLUID VISCOSITY AND FLOW RATE

Robinson Ord, Jr., Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Filed Oct. 14, 1980, Ser. No. 196,634
Int. Cl.³ G01F *1/66*; G01N *29/02*
U.S. Cl. 73—54 6 Claims



1. A method of measuring the flow rate of a fluid through a conduit comprising:

(a) measuring the speed of sound transmission through the fluid from an upstream point in the conduit to an opposed downstream point;

(b) measuring the speed of sound transmission through the fluid from said downstream point to said upstream point;

(c) subtracting the measurement of step (b) from the measurement of step (a) to determine the fluid flow rate;

(d) adding the measurement of step (a) to the measurement of step (b) to determine the fluid sound velocity;

(e) measuring the temperature of the fluid in the conduit;

(f) determining a fluid viscosity factor from the measured fluid sound velocity and temperature; and

(g) correcting the fluid flow rate by the fluid viscosity factor to obtain a corrected fluid flow rate.

2. A method of determining the viscosity of a fluid comprising:

(a) measuring the speed of sound transmission of the fluid;

(b) measuring the temperature of the fluid; and

(c) calculating the fluid viscosity by employing an empirical formula in which the variables are the fluid speed of sound transmission derived from step (a) and the fluid temperature derived from step (b).

4,331,026
INDENTER-TYPE HARDNESS TESTING APPARATUS

Bruce S. Howard, and William O. Walters, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 14, 1980, Ser. No. 168,626
Int. Cl.³ G01C *25/00*; G01N *3/42*
U.S. Cl. 73—81 18 Claims

1. In a hardness testing apparatus of the type having an indenter probe and a probe actuator for controllably moving said probe into and out of contact with a test part to thereby cause said probe to deformably penetrate the test part, and having sensing transducer means for producing an electrical signal representing the degree of such penetration as a measure of the hardness of the test part, the improvement in signal processing circuitry of such hardness testing apparatus comprising:

reset means;

indicator means responsive to said reset means for indicating a calibration mode; and,

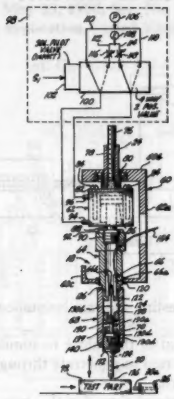
calibration processor means responsive to actuation of said probe by said actuator, said calibration processor means comprising:

calibration measuring processor means for developing a signal measurement representing the measured hardness

of a calibrating material when such a calibrating material is contacted by said probe;

difference taking processor means for taking the difference between said measurement signal and a stored hardness signal representing the known hardness of said calibrating material, and for developing a calibration error signal in response thereto;

comparison processor means for comparing said error signal with a predetermined threshold;



automatic error correcting processor means responsive to said comparison means when said error signal is less than said predetermined threshold for storing said error signal for automatically correcting subsequent hardness measurements of parts of unknown hardness; and,

recalibration disablement processor means responsive to said comparison processor means when said error signal is greater than said predetermined threshold for disabling said apparatus from further testing, said disablement processor means including means for reenabling said apparatus in response to said reset means.

4,331,027

DUAL-PURPOSE PENETRANT SYSTEM

Adolf Mlot-Fijalkowski, Lincolnwood, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Apr. 7, 1980, Ser. No. 137,629
Int. Cl.³ G01B *11/30*
U.S. Cl. 73—104 **5 Claims**

1. A method for detecting flaws in a workpiece under either white light or ultraviolet light which comprises the steps of:

applying to the surface of said workpiece a penetrant solution containing a rhodamine dye dissolved in an oxygen containing organic solvent, said dye possessing an inherent color and being capable of fluorescing under the influence of ultraviolet light, removing excess penetrant from said surface while leaving penetrant entrapped in any surface flaws, and

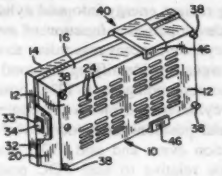
applying a developer suspension to the surface, said developer suspension including a finely divided developer powder and the same dye solvent as in said penetrant in a sufficient amount to lower the concentration of rhodamine dye in the entrapped penetrant below that at which quenching of fluorescence occurs.

4,331,028

METHOD AND APPARATUS FOR DETERMINING THE SHARPNESS OF A SAW CHAIN

Duane M. Gibson, Milwaukie, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Jul. 7, 1980, Ser. No. 166,612
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—104 **20 Claims**



1. A hand holdable container adapted for ascertaining the sharpness of a saw,

said container including an opening for reception of a quantity of freshly sawn wood chips therewithin and a removable closure for said opening,

a portion of said container being foraminous having a plurality of elongated openings each having a length greater than the width of the kerf cut by said saw and a width insufficient to pass the length of the majority of ribbon-like chips cut by sharp saw teeth while passing a proportion of chips cut by dull saw teeth as a result of said chips being shorter than the width of the elongated opening,

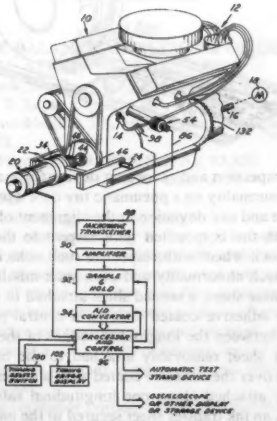
the remainder of the container cooperating to form an enclosure for said chips adapting the container to be hand manipulated for shaking smaller wood chips through said plurality of openings such that the quantity of larger wood chips remaining compared with the quantity of freshly sawn wood chips as initially received in said container indicates the overall sharpness of the saw.

4,331,029

METHOD AND APPARATUS FOR MEASUREMENT OF ENGINE IGNITION TIMING

Scott E. Wilson, Ann Arbor, Mich., assignor to Jodon Engineering Associates, Inc., Ann Arbor, Mich.

Filed Jul. 8, 1980, Ser. No. 166,767
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **19 Claims**



1. Apparatus for measuring ignition timing of an internal

combustion engine having at least one cylinder with a piston disposed to reciprocate therein and a rotatable shaft driven by said piston, said apparatus comprising means adapted to be operatively coupled to said shaft for providing a first signal which varies as a function of angular position of said shaft, means responsive to an ignition event correlated with said one cylinder for providing a second signal, means responsive to said first and second signals for indicating a first angular position of said shaft upon occurrence of said ignition event, means for injecting radiant energy into said cylinder such that resonances are developed as a function of motion of said piston within said cylinder, means responsive to said resonances and to said first signal for identifying a second angular position of said shaft corresponding to a TDC position of said piston within said cylinder, and means for comparing said first and second angular positions independently of time of occurrence of said ignition event and said TDC position to determine ignition angle relative to said TDC position of said piston within said cylinder.

4,331,030

TIRE INSPECTION AND RECORDING DEVICE

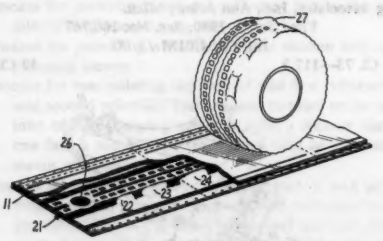
David F. Webster, 1325A Edwards Ave., Santa Rosa, Calif. 95401

Continuation-in-part of Ser. No. 971,803, Dec. 21, 1978, Pat. No. 4,184,365. This application Jan. 14, 1980, Ser. No. 111,894

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

Int. Cl.³ G01M *17/02*

U.S. Cl. 73—146 **2 Claims**



1. An inspection and recording device for ascertaining any surface abnormality on a pneumatic tire on a wheel on a dirigible vehicle and any deviation in the alignment of the wheel on which such tire is mounted with respect to the camber and toe-in of such wheel with respect to such vehicle and recording each such abnormality and each such misalignment comprising, a base sheet, a second sheet attached to the base sheet having an adhesive coated area on a central portion of the sheet and between the longitudinal edges of the base sheet, a first cover sheet removably attached to the base sheet and extensions over the adhesive coated area, a second cover sheet removably attached along one longitudinal side edge of the base sheet, an ink transfer sheet secured to the underside of the second cover sheet, and an outer transparent sheet secured along said one longitudinal edge.

4,331,031

METHOD AND APPARATUS FOR TESTING THE RAIN RESISTANCE OF FABRICS AND GARMENTS OR OTHER ARTICLES MADE THEREFROM

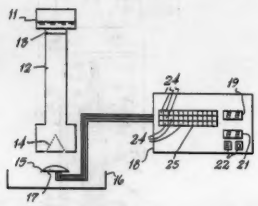
Jonathan E. Godrich, Ludford Mill, Ludlow, Shropshire, and David M. Towers, Rowden Mill, Rowden Bromyard, Herefordshire, both of England

Filed Jan. 28, 1980, Ser. No. 115,887

Claims priority, application United Kingdom, Feb. 2, 1979, 7903737

Int. Cl.³ G01N *33/36*

U.S. Cl. 73—159 **10 Claims**



1. A method for testing the rain-resistance of a fabric which comprises:

subjecting the front of the fabric to simulated rain;

detecting the first rain to penetrate through the fabric to the back of the fabric;

measuring the elapsed time for the rain to first penetrate through to the back of the fabric;

continuing the simulated rain on the front of the fabric for a predetermined time after the elapsed time;

detecting the total penetration of the rain through to the back of the fabric; and

observing the total degree of the penetration of the rain to the back of the fabric at the end of the predetermined time.

4,331,032

VARIOMETERS

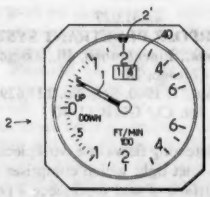
Jean-Luc Sicre, Fontenay-aux-Roses, France, assignor to S.F.E.N.A., Velizy-Villacoublay, France

Continuation of Ser. No. 903,875, May 8, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,829

Claims priority, application France, May 10, 1977, 77 14294

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—179 **14 Claims**



1. An improved variometer system for an aircraft having a dial with graduations representative of speed, comprising:

a. means for determining the instantaneous vertical speed of the aircraft;

b. means, responsive to said determining means, for displaying the instantaneous vertical speed of the aircraft, including a needle for indicating the instantaneous vertical speed on said graduations;

c. means for determining the potential vertical speed of the aircraft, which is based on the total kinetic and potential energy of the aircraft; and

d. at least one indicator, responsive to said determining

means of potential vertical speed, for displaying potential vertical speed, said indicator being movable around the dial and the position of which with respect to said needle indicates the instantaneous acceleration on the trajectory of the aircraft.

4,331,033

PRECISION FLOWMETER

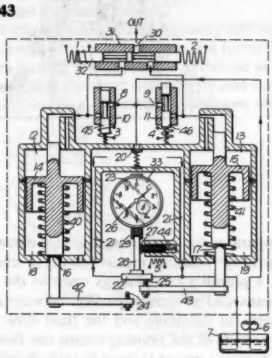
Reginald S. Emerson, Buckingham, England, assignor to Leslie Hartridge Limited, Buckingham, England

Filed May 23, 1980, Ser. No. 152,689

Claims priority, application United Kingdom, May 31, 1979, 7918898

Int. Cl.³ G01F *3/14*

U.S. Cl. 73—243 **13 Claims**



1. A precision positive displacement flowmeter for providing an accurate measurement of fluid flow at one end of a fluid circuit, comprising:

(a) a cylinder and piston arrangement constructed to receive and emit circuit fluid continually;

(b) connection means provided on said cylinder and piston arrangement for connecting the latter to such a circuit;

(c) indicating means adjacent to said cylinder and piston arrangement and arranged to monitor piston movement and to provide an indication thereof;

(d) a moveable operating rod connected to said indicating means, movement of which rod determines the measurement displayed by said indicating means;

(e) biassing means acting on said operating rod to urge the latter in an outward direction away from said indicating means; and

(f) respective parts which are fixed to pistons of said cylinder and piston arrangement, these parts each being in connection with said moveable operating rod to push the latter inwardly on a fluid-emitting piston stroke.

4,331,034

ULTRASONIC PROBING APPARATUS

Hiroyuki Takeda, Hiroshima; Ichio Iseki, Sendai; Katsumi Kawai, Tokyo; Hiroyuki Okajima, Nagoya; Sigeru Kajiyama, Hitachi; Sakae Sugiyama, Tokaimura, and Kimio Kanda, Hitachi, all of Japan, assignors to The Chugoku Electric Power Co., Inc.; Tohoku Electric Power Co., Inc.; The Tokyo Electric Power Co., Inc.; The Chubu Electric Power Co., Inc. and Hitachi, Ltd., all of, Japan

Filed Aug. 6, 1979, Ser. No. 63,775

Claims priority, application Japan, Apr. 9, 1979, 54-42068

Int. Cl.³ G01K *29/04*

U.S. Cl. 73—637 **8 Claims**

1. An ultrasonic probing apparatus comprising:

annular guide rail means to be arranged in surrounding relation to a pipe to be ultrasonically probed for any flaws that might be present therein;

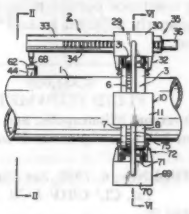
a flaw detecting unit including a first truck mounted for circumferential movement on said rail means;

a circumferentially driving unit including a second truck mounted for circumferential movement on said rail means; and

an axially driving unit including a third truck mounted for circumferential movement on said rail means;

said flaw detecting unit, said circumferentially driving unit and said axially driving unit being disposed separately from one another and arranged in spaced-apart relation on said annular guide rail means;

means, separate from said rail means, for connecting said flaw detecting unit, said circumferentially driving unit and said axially driving unit together so that the trucks thereof may move together circumferentially of the pipe on the



annular guide rail means and so that their weights produce torques about a horizontal pipe that generally cancel each other;

said flaw detecting unit further including arm means movable axially relative to said annular guide rail means and said first truck and movable axially along the external surface of the pipe, and ultrasonic probing means for transmitting ultrasonic waves and receiving reflected waves from the pipe to detect pipe flaws and being attached to said arm means for movement therewith;

said circumferentially driving unit further including first drive means for moving said circumferentially driving unit circumferentially of the pipe on said annular guide rail; and

said axially driving unit further including second drive means, and transmission means for transmitting the drive force of said second drive means to said arm means to move said arm means axially of the pipe.

4,331,035

GEOMETRIC BALANCE ADJUSTMENT OF THIN FILM STRAIN GAGE SENSORS

Walter H. Eisele, Malibu, Calif.; Helmut H. A. Krueger, Elgin, Ill.; Robert E. Lajos, Crystal Lake, Ill., and Donald J. Koneval, Arlington Heights, Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 13, 1979, Ser. No. 93,835

Int. Cl.³ G01B *7/20*; G01L *1/22*

U.S. Cl. 73—765 **4 Claims**

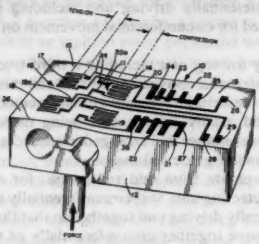
1. A thin-film strain gage comprising:

an inflectible element having a first portion subjected to tensional stress and a second portion subjected to compressional stress and a third portion not subject to stress;

a plurality of strain-sensitive, thin-film resistors having a Wheatstone bridge arrangement wherein alternating legs of the bridge are positioned on said element on said tensional stress portion and the remaining legs of said bridge are positioned on said element on said compressional stress portion;

an adjusting resistance portion having a plurality of discrete thin-film resistance elements arranged in series on said third portion of said element, said adjusting resistance

portion connected in series between two electrically adjacent legs of said Wheatstone bridge, one adjacent leg being on said tensional stress portion and the other adjacent leg being on said compressional stress portion, said adjusting resistance portion being positioned on said element coplanarly adjacent to said Wheatstone bridge arrangement.

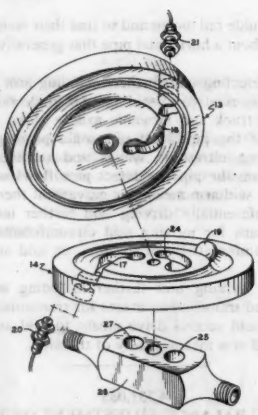


4,331,036

FLUID FLOWMETER

Asbjorn M. Severson, Minneapolis, and John A. Volk, West St. Paul, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 6, 1980, Ser. No. 204,417
Int. Cl.³ G01F *1/70, 3/00*
U.S. Cl. 73—861.05 **7 Claims**



1. An apparatus for volumetrically measuring the flow of a fluid in a line comprising:

a housing having a fluid inlet and fluid outlet;

a chamber defined within said housing in the shape of a hollow torus in fluid communication with the fluid inlet and fluid outlet;

a single follower element of similar cross-section shape to the torus cross-section but of slightly smaller dimension than that of the torus disposed therein such that it is free to move along the toroidal path;

detection means for detecting the passage of the follower element at at least two points along the toroidal path wherein one such point is located adjacent to the fluid inlet and one such point is located adjacent said fluid outlet, said detection means including means for generating signals indicative of the passage of the follower element at each of said points; and

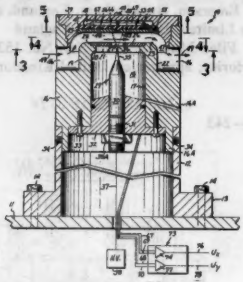
signal processing means relating the time intervals between the detections of the follower element to the flow of the flowmeter.

4,331,037

FLUID FLOW MEASURING APPARATUS

Zell Du Vall, St. Paul, Minn., assignor to TSI Incorporated, St. Paul, Minn.

Filed Jun. 2, 1980, Ser. No. 155,312
Int. Cl.³ G01F *1/56*
U.S. Cl. 73—861.09 **44 Claims**



1. An apparatus for measuring the movement of a flowing fluid comprising: housing means having a chamber, a fluid flow path, a plurality of openings open to the outside of the housing means, and an annular passage between and in communication with the openings and the fluid flow path whereby fluid from outside of the housing means can flow through said flow path, ionizing means located in said chamber operable to produce ions, ion collecting means mounted on the housing means, said ion collecting means having a plurality of spaced ion collecting members, said fluid flow path located between the ionizing means and the ion collecting means, means for maintaining an electrical potential between the ionizing means and the ion collecting means whereby ions migrate from the ion collecting means across the fluid flow path and impinge on the ion collecting members producing a current in each ion collecting member, a member having a hole substantially closing one end of the chamber, said member being spaced from the ion collecting means a distance generally corresponding to the width of the fluid flow path, said ionizing means being located in the chamber in axial alignment with the hole in the member outside of the fluid flow path whereby ions migrate from the ionizing means through the hole and across the fluid flow path and impinge on the ion collecting means, said fluid moving in the fluid flow path deflecting said ions in an amount proportional to the movement of the fluid thereby producing different currents in at least some of said ion collecting members, and amplifier means connected to each ion collecting member for receiving current therefrom, said amplifier means having an output signal corresponding to the difference in current in at least two of the ion collecting members, said output signal providing information as to the movement of the flowing fluid.

4,331,038

PUSH-BUTTON TYPE TUNER APPARATUS

Mitsuaki Naoi, Tokyo, Japan, assignor to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,766
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **13 Claims**

1. A push-button type tuner apparatus, comprising:

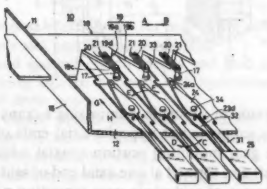
(a) a plurality of manually operated means extending in backward and forward directions with respect to a frame structure and successively arranged in a mutually parallel manner in transverse directions, so that front end parts thereof respectively extend and project frontwards with respect to the

frame structure and each of the front end parts are respectively mounted with a push-button, each of said manually operated means being freely slidable in the backward and forward directions and having a memory member for memorizing a frequency, capable of rotating about an axis perpendicular with respect to the upper surface of said manually operated means, and clamp means for clamping said memory member at a predetermined angular position;

(b) slide cam means arranged and provided freely slidable in a direction transverse said manually operated means and having a substantially V-shaped cam part, said slide cam means being slid appropriately by associated cam surfaces of said V-shaped cam part when engaged by said memory member moving in the forward direction;

(c) a tuner whose frequency of reception varies in response to the sliding of said slide cam means;

(d) a part of said clamp means of the manually operated means being of a two-arm structure having a slot formed between a pair of arms, having a support part provided at an innermost part of said slot, the inner diameter of said support part being varied by varying the distance between said pair of arms;



(e) said push-button having an opening, and being relatively slidable in the backward and forward directions accommodating free ends of said arms within said opening with respect to said free ends of said arms, and said push-button being unitarily formed with a clamp cam part on at least one side of both inner sides making sliding contact with both outer sides of the free ends of said arms of said opening, for making contact with at least one arm of said arms and resiliently deforming said one arm towards a direction so as to close upon the other arm, said clamp cam part being an inclined cam surface inclined with respect to the sliding direction of said push-button; and

(f) said memory member having a boss projecting in a perpendicular direction with respect to the upper surface of said manually operated means, said boss being rotatably supported by the support part of said clamp means, said one arm being rotationally displaced towards a direction to close upon said other arm in response to the relative sliding of said push-button, said memory member being prevented from rotating by the holding of said boss by both said arms.

4,331,039

GEAR CHANGER

William G. Ruge, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,814

Int. Cl.³ F16H *35/18, 3/08*

U.S. Cl. 74—10.41 **5 Claims**

1. A gear changer for a rotatable data selector apparatus which comprises:

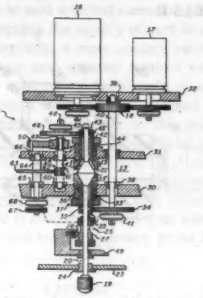
a base;

a selector member rotatably mounted on said base and translatable along an axis between selectable first and second positions;

clutching means responsive to the axial translation of said selector member, said clutching means including;

first and second substantially identical conical friction surfaces, which are axially disposed on said selector member; and

first and second gears rotatably mounted on said base and along said axis, said first and second gears having an aperture through which extends said selector member and having axially disposed third and fourth conical friction surfaces, which respectively interface with said first and second conical friction surfaces in either said first or second selectable positions;



first gear train means responsive to the rotation of said selector member and said first gear for rotating at a first speed ratio;

second gear train means responsive to the rotation of said selector member and said second gear for rotating at a second speed ratio; and

output means jointly responsive to said first and second gear train means.

4,331,040

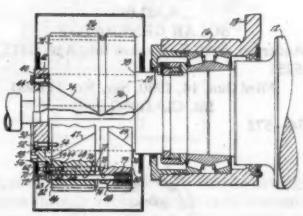
ANTI-BACKLASH GEARING

Archie N. Swasey, Oxford, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Apr. 21, 1980, Ser. No. 141,954

Int. Cl.³ F16H *55/18, 35/08*

U.S. Cl. 74—409 **5 Claims**



1. A gear drive mechanism for driving two shafts in synchronized rotation comprising:

a unitary double gear having teeth of opposite helixes and being fixed on one of said shafts;

two pinions slidable axially on the other of said shafts and fixed thereon against rotation;

one of said pinions meshing with the teeth of said gear of one helix and the other of said pinions meshing with the teeth of said gear of the opposite helix;

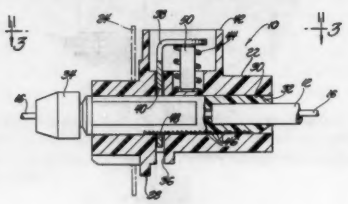
means for adjustably securing said one pinion to said other shaft for regulating the synchronized rotative relation between the shafts; and

means for biasing said other pinion axially relative to said one pinion for controlling backlash between the teeth of the double gear and the pinions.

4,331,041
MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY

William G. Bennett, Troy, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Feb. 7, 1980, Ser. No. 119,329
The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.
Int. Cl.³ F16C 1/22
U.S. Cl. 74—501.5 R 8 Claims



1. A motion transmitting remote control assembly of the type for transmitting forces along a curved path by a motion transmitting core element, said assembly comprising; a flexible conduit having opposite ends, a flexible motion transmitting core element movably supported by said conduit with the ends thereof extending from the ends of said conduit, a support member, locking means engageable with said conduit for controlling the longitudinal movement thereof relative to said support member, biasing means reacting between said support member and said locking means for urging said locking means into engagement with said conduit while allowing said locking means to be moved out of engagement with said conduit in response to a predetermined force, and temperature responsive means reacting between said support member and said locking means in parallel with said biasing means for allowing movement of said locking means in response to said predetermined force in a predetermined temperature range and for requiring higher forces than said predetermined force at temperatures out of said predetermined temperature range.

4,331,042
SOLAR GENERATOR

Jerry L. Anderson, 5900 E. Thomas Rd., Apt. G115, Scottsdale, Ariz. 85251

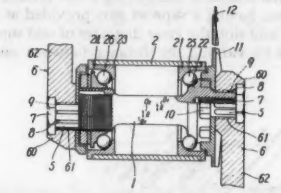
Filed Jan. 14, 1980, Ser. No. 111,931
Int. Cl.³ G05G 3/00
U.S. Cl. 74—572 1 Claim

1. A flywheel comprising:
a hub having a central aperture therethrough;
a pluralty of shafts fixedly coupled to said hub and extending radially outward therefrom;
pneumatic means coupled to the end of said plurality of shafts; and
a plurality of weights, each one slidably mounted on one of said plurality of shafts between said hub and said pneumatic means for compressing said pneumatic means as the rotational speed of the flywheel increases, said pneumatic means urges said weights toward said hub as the rotational speed of said flywheel decreases, said central aperture is notched, each of said pneumatic means includes an air valve for varying the amount of air sealed within said pneumatic means.

4,331,043
GEAR CRANK FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 24, 1980, Ser. No. 143,364
Claims priority, application Japan, May 10, 1979, 54-62627[U]; Jul. 23, 1979, 54-102172[U]
Int. Cl.³ G05G 1/14
U.S. Cl. 74—594.2 2 Claims



1. A gear crank for a bicycle, comprising a crank shaft, a pair of crank arms supported at opposite axial ends of said crank shaft, a chain gear mounting portion coaxial with the axis of said crank shaft and formed at one axial end of said crank shaft, the outer diameter of said chain gear mounting portion being larger than that of said crank shaft, a chain gear mounted on said chain gear mounting portion, said crank shaft having at opposite axial ends thereof integral supports having round outer peripheries for respectively supporting said crank arms, said supports having respective axes offset from the axis of rotation of said crank shaft, said crank arms comprising bosses having insertion bores which fit onto said supports and arm bodies extending in one direction from said bosses respectively, said gear crank further comprising a spline coupling provided between the inner peripheral surface of said insertion bore at each of said bosses and outer peripheral surface of each of said supports for coupling each of said crank arms to said crank shaft at a prescribed angular position with respect to said crank shaft, said spline coupling permitting said insertion bore to be changeable in its position on said support to thereby adjust the length between the axis of said crank shaft and the utmost end of said arm body of each of said crank arms, means for preventing relative rotation between said chain gear and crank shaft, and means for fixing said crank arms to said crank shaft, said chain gear being sandwiched between one of said crank arms and said chain gear mounting portion by said fixing means.

4,331,044
FOUR SPEED OFFSET AUTOMATIC OVERDRIVE TRANSMISSION WITH LOCKUP IN DIRECT AND OVERDRIVE

Charles C. Bookout, Orchard Lake, and Thomas R. Stockton, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 12, 1980, Ser. No. 149,063
Int. Cl.³ F16H 47/08, 37/00, 57/10
U.S. Cl. 74—688 2 Claims

1. In a transaxle transmission for a wheeled vehicle with an engine mounted transversely to the centerplane of the vehicle;
a hydrokinetic torque transmitting unit having an impeller connected to said engine and a turbine connected to a turbine sleeve shaft;
multiple ratio gearing comprising two sun gears of different diameter, a ring gear, a set of short pinions engaging the

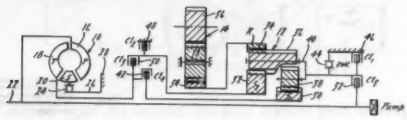
smaller sun gear, a set of long pinions engaging the larger sun gear and said ring gear, said pinions engaging each other and a carrier rotatably supporting said pinions;

said hydrokinetic unit, said engine and said gearing being mounted on a common axis;

final drive gearing located in a transverse plane between said hydrokinetic unit and said multiple ratio gearing;

a driven element of said final drive gearing being mounted for rotation about an axis spaced from and parallel to said common axis;

first and second clutch means for connecting said turbine shaft to said larger sun gear and said smaller sun gear, respectively;



third clutch means for connecting said impeller to said carrier;

first and second brake means for anchoring said carrier and said larger sun gear, respectively;

said first and second clutch means and said second brake means being located between said hydrokinetic unit and said final drive gearing;

said third clutch means and said first brake means being located on the side of said multiple ratio gearing remote from said hydrokinetic unit;

said first clutch means having a torque input portion connected to the torque input portion of said second clutch means and a torque output portion forming a part of said second brake means.

4,331,045

PNEUMATIC CONTROL SYSTEM FOR AN AUTOMATIC VEHICLE TRANSMISSION

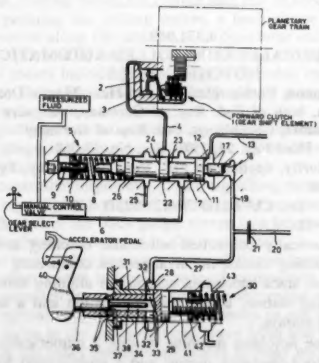
Ferdinand Piech, Ingolstadt; Heinz Dörpmund, Wolfsburg; Gerd Oberpichler, Brunswick; Ernst-August Honig, and Dieter Schmidt, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 61,058

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1978, 2833641

Int. Cl.[3] B60K *41/22*; F16D *43/22*; B60K *41/06*

U.S. Cl. 74—867 **10 Claims**



1. In an automatic transmission for a motor vehicle, having an accelerator pedal, said transmission having a mechanical planetary gear train with hydraulically actuatable gear shift elements, a gear select lever having a plurality of selectable forward drive positions, including automatic forward drive (D), a source of first pressurized hydraulic fluid, a manual control valve, responsive to the position of said select lever, for supplying said first fluid to a selected gear shift element when said lever is in one of said forward drive positions, and a fluid line communicating between said manual control valve and said selected element for delivering said first fluid from said manual control valve to said selected element, a control system for selectively interrupting the supply of said first fluid to said selected element, comprising a main control valve arranged in said fluid line between said manual control valve and said selected element for controlling the supply of said first fluid from said manual control valve to said selected element, said main control valve being responsive to the position of said accelerator pedal and controlling the supply of said first fluid to said element to discontinue said first fluid supply and exhaust the fluid from said element to disengage said element in selected vehicle operating conditions, said conditions including when said vehicle is stationary, said gear select lever is in automatic drive (D), and said accelerator pedal is released.

4,331,046

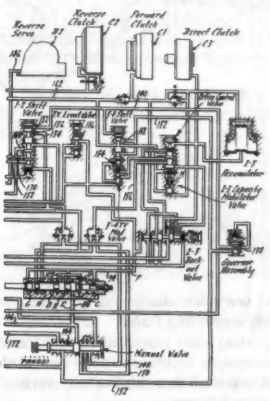
TRANSMISSION THROTTLE VALVE SYSTEM

Allan S. Leonard, and Lawrence D. Burcz, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 26, 1980, Ser. No. 134,241

Int. Cl.[3] B60K *41/06, 41/10*

U.S. Cl. 74—867 **6 Claims**



1. In a torque delivery driveline for a vehicle having a driver operated engine throttle and a multiple ratio transmission, an automatic transmission control system for controlling application and release of fluid pressure operated clutch and brake servos in said transmission including a pump, control pressure passages connecting the pump to the servos, a pressure regulator valve means for regulating the pressure made available to said servos and shift valves in said passages adapted to establish and interrupt transfer of control pressure to said servos; the improvement comprising a transmission throttle valve means for establishing a signal pressure that is proportional in magnitude to the torque at the input side of said transmission comprising:

a modulator valve element and a throttle plunger element mounted in a valve chamber, a valve spring between said plunger and said throttle valve element, means for applying a force on said valve element that opposes the force of said spring, a throttle pressure output port, a regulated pressure input port and an exhaust port communicating with said valve chamber and registering with said valve element whereby a modulating action is established to

produce said signal pressure in said output port; said passages including a first passage portion communicating with said output port, a second portion communicating with said shift valve and a third portion communicating with said regulator valve means; said regulator valve means responding to changes in the magnitude of said signal pressure to increase or decrease the regulated pressure in said servos; a driving connection between said engine throttle and said plunger; said valve element being shifted by the valve forces acting thereon to block said exhaust port when said driving connection is disabled whereby the pressure in said output port rises to the regulated pressure in said input port.

4,331,047

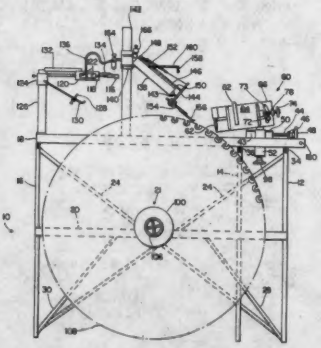
SAW SHARPENING MACHINE

Cecil English, 7440 Morgan Rd., Woodbine, Md. 21797

Filed Apr. 30, 1980, Ser. No. 145,380

Int. Cl.³ B23D *63/14, 63/06, 63/20*

U.S. Cl. 76—41 **3 Claims**



1. A circular saw blade sharpening machine comprising:

an upstanding supporting frame;

a blade-supporting shaft journaled on said frame;

means to clampingly secure a circular saw blade to an end portion of said shaft in a substantially vertical position at one side of said frame;

a carriage connected to said frame by a pair of slide rods each of which are slidably supported by a plurality of bearing blocks, wherein said carriage is constrained to move along an axis substantially perpendicular to and passing through the plane of said saw blade;

a grinding wheel rotatably mounted on said carriage in a position to engage the cutting surface of a tooth of said saw blade as said carriage is moved along its axis;

means affixed to said carriage for driving said grinding wheel;

pneumatically operated index means connected to said frame and positioned in the plane of said saw blade for engaging the teeth of said saw blade and rotating said saw blade through an angle corresponding to the angular spacing between successive teeth; and

means affixed to said frame and engaged by said slide rods for activating said index means when said carriage is at a predetermined position.

which moves perpendicular to the plane of the saw blade to engage the cutting surface of a tooth.

4,331,048

CUTTING TIP FOR METAL-REMOVING PROCESSING

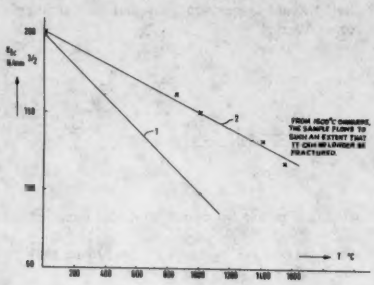
Ulf Dworak, Baltmannsweiler, and Hans Olapinski, Aichwald, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,608

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923213

Int. Cl.³ B23B *3/00;* **B26D** *1/00;* **C04B** *35/48*

U.S. Cl. 82—1 C **17 Claims**



16. In a method for manufacturing an article from a metal selected from the group consisting of case-hardened steel, quenched steel and tempered steel, wherein the steel is processed with a cutting tip, at cutting speeds greater than 500 m/min, the improvement which comprises said cutting tip being composed of the following composition

70–90 weight percent of aluminum oxide,

10–30 weight percent of zirconium oxide,

0.1–0.5 weight percent of magnesium oxide,

wherein the amount of other oxide impurities is less than 0.6 weight percent and the proportions of components add up to 100,

said composition being sintered at high temperatures and having

a porosity of less than 2%,

an average particle size of less than 1.7 μm, and a fracture toughness K_{Ic} at room temperature of at least 190 $N/mm^{3/2}$ and of least 140 $N/mm^{3/2}$ at 1000° C., measured on prismatic rods 2.5 mm wide, 3.5 mm high and 12 mm long, cut from the cutting tips and provided with a saw cut 120 μm wide, 0.8±0.1 mm deep and having a notch radius of between 50 and 60 μm.

4,331,049

NUMERICALLY CONTROLLED AUTOMATIC NOTCHING PRESS

Ewald Bergmann, Rechberghausen, and Hans-Martin Dommer, Göppingen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göeppingen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,062

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807066

Int. Cl.³ B21D *28/22;* **B26D** *7/06*

U.S. Cl. 83—71 **14 Claims**

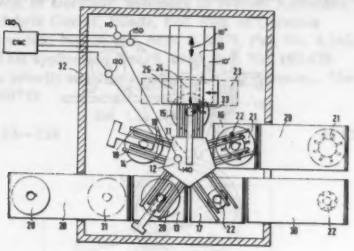
1. A numerically controlled automatic notching arrangement for notching blanks, the arrangement comprising

at least one stack unloading station, an aligning station, a processing station, a first stacking station and a second stacking station,

at least one notching machine having a numerically controlled tool changing means, and a multi-armed feeding and removing means including an indexable turntable for conveying blanks between at least one said stack unloading station, said aligning station, said processing station,

said first stacking station and said second stacking station, characterized in that

conveyor means are provided for linking the stack unloading



station with the second stacking station, said conveyor means being driven independently of the indexable turntable whereby blanks may be selectively conveyed from the second stacking station to the stack unloading station.

4,331,050

CONTROL FOR PAPER CUTTING APPARATUS

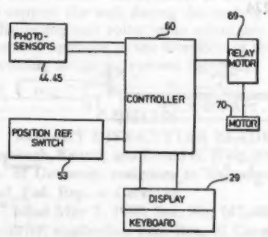
Franc Gergek, Willowdale, Canada, assignor to Computerized Cutters Ltd., Markham, Canada

Filed Mar. 30, 1979, Ser. No. 25,583

Claims priority, application Canada, Oct. 3, 1978, 312625; Oct. 31, 1978, 315014

Int. Cl.³ B26D *5/34*

U.S. Cl. 83—71 **12 Claims**



1. A control mechanism for use in conjunction with a paper cutting machine having a table for supporting a pile of sheets to be cut, cutting means for cutting said pile of sheets and means for operating the cutting means, a back gauge mounted for movement along the table so as to determine cutting positions of the pile and to stop it in a position for cutting, mechanical drive means including a worm gear operable manually or by power drive for moving the back gauge along the table in either direction, comprising,

signalling means for signalling the movements of the back gauge including an optical disc mounted on said worm gear,

a controller responsive to said signalling means and including a digital computer and means for resetting the controller when the back gauge moves to a key position,

a keyboard connected to the computer,

the optical disc having a series of circumferentially spaced-apart radial indicia, a pair of companion photosensors mounted in a position to sense the radial indicia on the optical disc, whereby its movement in one direction produces in the controller one wave form and its movement in the other direction produces another wave form,

the controller being electrically connected to the signalling means and the computer converting the wave forms into direction and distance corresponding to the travel of the back gauge and provided with means to (a) accept and store such information and (b) to accept program information from the keyboard and to store and process this information and retrieve it on command from the keyboard or the cutting means and to provide output to control said mechanical drive means, and including,

means connected to the computer mechanism to control the drive means to move the back gauge in either direction and stop the gauge in response to command from the computer mechanism,

the keyboard operating the controller to register and store a plurality of programs on separate channels, each program made up of a number of sequential positions of the back gauge,

means within the computer responsive to the keyboard or the cutting means for selecting a desired channel and retrieving a program and applying it to control the drive means to cause movement of the back gauge and a procedure for stopping it according to that program,

digital display means connected to the computer mechanism for visually displaying the action of the controller, including the position of the back gauge and the cutting sequency programs.

4,331,051

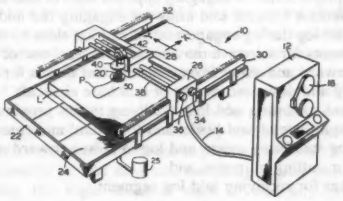
APPARATUS FOR CUTTING SHEET MATERIAL WITH VARIABLE GAIN CLOSED LOOP

H. Joseph Gerber, and Leonard G. Rich, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Sep. 10, 1979, Ser. No. 73,871

Int. Cl.³ D06H *7/00*; B26D *5/00*; B26F *1/38*

U.S. Cl. 83—74 **9 Claims**



1. In an automatically controlled cutting machine having a cutting blade which advances at various speeds and orientations along a cutting path through limp sheet material by means of displacement and orientation drive motors and associated drive motor controls, the improvement comprising:

load sensing means operatively associated with the cutting blade and material for detecting lateral loads applied to the blade by the material during cutting and generating load signals representative of the lateral loads;

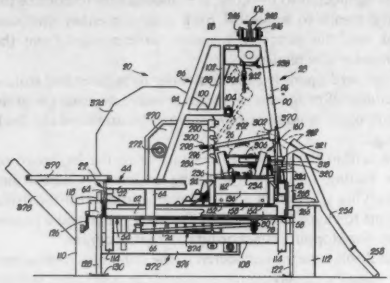
feedback means coupling the load signals to the motor controls for modifying the blade orientations produced by the orientation drive motor in accordance with the detected lateral loads to reduce the loads as the blade advances along the cutting path, the feedback means having a variable gain adjusting the modifying effect of the lateral load signal on blade orientations produced by the orientation drive motor; and

gain adjustment means connected with the feedback means for adjusting the variable gain in accordance with the speed at which the blade is advanced through the material by the displacement drive motors so that the feedback means has different gains at different speeds.

4,331,052
LOG CUTTING DEVICE

Leslie A. Neff, 2020 W. 15th, Emporia, Kans. 66801

Filed Feb. 7, 1980, Ser. No. 119,403
Int. Cl.³ B27B *25/00, 31/00*
U.S. Cl. 83—155 15 Claims



1. A log cutting device, comprising:

means for supporting an elongated log in an elevated position above the ground;

means for elevating and loading said log onto said log-supporting means;

means for cutting of said log generally transverse to the longitudinal axis thereof to present a log segment, including a circular saw blade presenting an input face adjacent said log-supporting means and an opposed output face, and means mounting the saw blade for rotation and against translatory movement thereof;

means for selectively shifting said log in an axial direction towards said saw blade and into a cutting position relative to the saw blade for said cutting of said log segment,

said log-supporting means including means for stabilizing said log during cutting thereof and comprising a pair of upright arms for engaging opposed sides of said log, a base element beneath said arms for engaging the underside of said log during engagement of said log sides by said arms, means for selective movement of at least one of the arms toward and away from said log, and means for selective up and down movement of said base element;

means mounting said log-stabilizing means proximal to said input face of said blade, and for lateral movement of said log-stabilizing means and log in unison toward said blade for cutting purposes; and

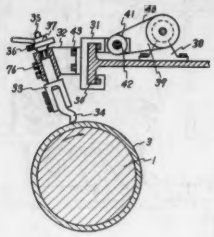
means for receiving said log segment.

4,331,053
ROTARY DIE CUTTER

Hiroto Imai, Fukuyama, and Noriyuki Hoshino, Mihara, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,678
Claims priority, application Japan, Jul. 31, 1979, 54-97469; Jun. 6, 1980, 55-76132
Int. Cl.³ B31B *1/20*
U.S. Cl. 83—174 4 Claims

1. Rotary die cutter for effecting a punching and scribing on a sheet which is fed between a die cylinder and an anvil cylinder disposed in parallel with said die cylinder, said die cylinder being adapted to be rotated in a predetermined direction and provided on its outer peripheral surface with a knife and a scribing rule, said anvil cylinder being adapted to be rotated in the opposite direction to said die cylinder and provided on its peripheral surface with an anvil adapted to receive said knife and said scribing rule, characterized by comprising: an adjusting mechanism for adjusting the clearance between said die cylinder and said anvil cylinder, a blade carrier disposed adjacent to said anvil cylinder and slidable in the axial direction of said anvil cylinder; a cutting blade capable of cutting said anvil and attached to said blade carrier in such a manner as to move toward and away from the axis of said anvil cylinder; and a staged gear type speed changing mechanism interposed between the driving mechanisms for said die cylinder and said

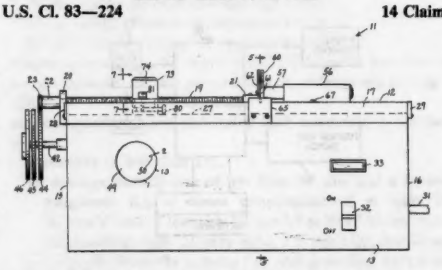


anvil cylinder, said speed changing mechanism being capable of changing the angular velocity of said anvil cylinder with respect to the angular velocity of said die cylinder over a plurality of stages of speed at a fine pitch.

4,331,054
ELECTRIC GEL SLICER

Vincent P. Williams, Canogh Park, and Shelly S. Sandifer, Simi Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,239
Int. Cl.³ B26D *3/16, 5/22*
U.S. Cl. 83—224 14 Claims



1. A gel slicer comprising a support formed with a gel guide trough; a feed screw journalled on said support parallel to said trough; feed plunger means threadedly engaged on said feed screw and having a plunger portion engaged in the trough;

drive means to intermittently drive the feed screw and to define a predetermined dwell period between driving periods of said feed screw, said drive means including a motor, a continuously driven shaft, and control means to effect said intermittent driving of said feed screw followed in sequence by a period during which said feed screw is not driven;

transverse cutting blade means pivoted on said support adjacent said trough, means normally maintaining said blade means elevated relative to said trough, and

means to drive said blade means downwardly through the trough at a predetermined time following the initiation of a dwell period of said feed screw, said means to drive the blade means downwardly comprising biasing means urging said blade means downwardly and cam means normally maintaining said blade means elevated and having means to release said blade means at said predetermined time following the initiation of said dwell period.

4,331,055

APPARATUS FOR CUTTING PORTIONS OUT OF A WEB OF MATERIAL

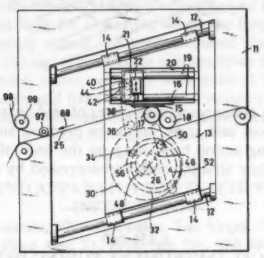
Knut Kammann, Bünde, and Gerhard Tiemann, Löhne, both of Fed. Rep. of Germany, assignors to Werner Kammann Maschinenfabrik GmbH, Bünde, Fed. Rep. of Germany

Division of Ser. No. 18,453, Mar. 8, 1979, Pat. No. 4,245,538. This application Oct. 9, 1980, Ser. No. 195,478

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810713

Int. Cl.³ B26F *1/00*

U.S. Cl. 83—318 **31 Claims**



1. Apparatus for punch cutting portions from a web, comprising means for displacing the web, blade means for punch cutting the web, means for engaging the blade means with and disengaging the blade means from the web, means for displacing the blade means in an adjustable cutting stroke movement, at least one rotary support roller disposed at the side of the path of movement of the web opposite to the blade means and operable to support the web during the cutting operation and means for displacing said roller in an adjustable reciprocating stroke movement opposite to the direction of the blade means during the cutting stroke movement thereof.

4,331,056

ROTARY DISK-CUTTER BLADE

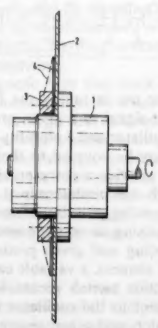
Theodor Hombach, Kaarst, and Ewald G. Welp, Erkrath, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,449

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920610

Int. Cl.³ B27B *5/32;* B26D *7/26*

U.S. Cl. 83—666 **2 Claims**



1. A rotary disk-cutter blade assembly comprising a rotatable support, a cutter blade having a central opening through which it is mounted on the support, one resiliently deformable dished member mounted having a central opening through which it is mounted on the support with a concave surface contacting one surface of the blade, the diameter of the deformable member ranging from 60 to 80% of that of the blade, and a mounting ring on the support and engaging the deformable member just about its inner periphery and deforming it into a flat disk contacting the blade over substantially the entire area of the deformable member.

4,331,057

AUTOMATIC CHORD CONTROL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

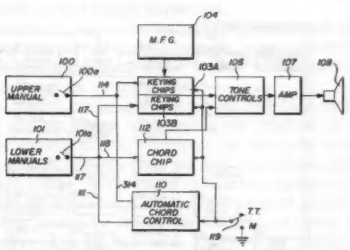
Robert W. Wheelwright, Tonawanda, and Peter E. Solender, Williamsville, both of N.Y., assignors to The Wurlitzer Company, DeKalb, Ill.

Division of Ser. No. 755,173, Dec. 29, 1976, Pat. No. 4,197,777, which is a continuation of Ser. No. 586,231, Jun. 12, 1975, abandoned. This application Jul. 6, 1979, Ser. No. 55,303

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.³ G10H *1/38, 5/00*

U.S. Cl. 84—1.17 **10 Claims**



1. An electronic musical instrument comprising: tone generator means capable of producing a plurality of musical tones, a primary keyboard portion having a plurality of keys corresponding to a plurality of musical tones associated therewith, at least one secondary keyboard portion having a plurality of keys corresponding to a plurality of musical tones associated therewith, a plurality of key-operated switches, each operated by one of the keys of said primary and secondary keyboard portions, digital logic means operatively coupled with said tone generator means and with said key-operated switches for causing said tone generator means to produce tones in response to the actuation of said keys and including digital means for ascertaining the logic states of each of said key-operated switches, and digital control means operatively coupled with said tone generator means and with said digital means for causing said tone generator means to produce one or more additional musical tones corresponding to musical tones associated with said primary key-board portion in response to and determined by the actuation of one or more keys on said secondary keyboard portion and the actuation of at least one key on said primary keyboard portion, said digital control means including digital decoding means for decoding the note names of said one or more musical tones, said digital decoding means being responsive to the actuation of said one or more keys on said secondary keyboard portion for determining the note names of said one or more additional musical tones.

4,331,058

ADAPTIVE ACCOMPANIMENT LEVEL IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Nov. 24, 1980, Ser. No. 209,775

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.21 **11 Claims**

1. In a musical instrument having a first and second key-

board each having an array of keyswitches and in which the successive points of a first and a second waveshape are computed by means of a discrete Fourier transform using sets of selected harmonic coefficients, apparatus for maintaining a loudness ratio between the musical tones generated in response to keyswitches actuated on the first keyboard and the musical tones generated in response to keyswitches actuated on the second keyboard in response to a preselected level control signal comprising:

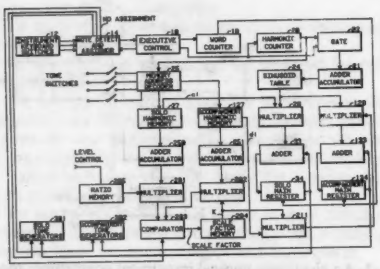
a plurality of first harmonic memories each storing a data set comprising a set of harmonic coefficients and a loudness value,

a plurality of second harmonic memories each storing a data set comprising a set of harmonic coefficients and a loudness value,

memory addressing means for reading out data sets stored in said plurality of first harmonic memories and data sets stored in said plurality of second harmonic memories,

a ratio number generator generating a ratio number R,

a first plurality of tone switches associated with said first keyboard for selecting data sets read out of said plurality of first harmonic memories,



a second plurality of tone switches associated with said second keyboard for selecting data sets read out of said plurality of second harmonic memories,

loudness balance means whereby the data sets selected by said second plurality of tone switches are scaled in magnitude in response to said ratio number R to produce scaled data sets,

a first computing means for computing a waveshape in response to data sets selected by said first plurality of tone switches,

a second computing means for computing a waveshape in response to said scaled data sets,

a plurality of first tone generators, each of which is associated with an actuated keyswitch on said first keyboard, for converting the waveshape computed by said first computing means to audible musical sounds, and

a plurality of second tone generators, each of which is associated with an actuated keyswitch on said second keyboard, for converting the waveshape computed by said second computing means to audible musical sounds.

4,331,059

ACCOMPANYING DEVICE FOR PLAYING STRINGED INSTRUMENTS

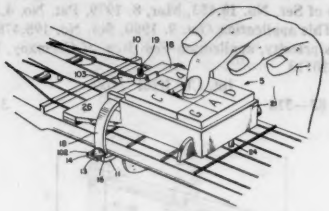
Jose Marabotto, Mar Atlantico 144, Neptuno-Monterrico, Lima, Peru (33)

Filed Jul. 11, 1980, Ser. No. 167,487

Int. Cl.³ G10D *3/00*

U.S. Cl. 84—317 **7 Claims**

1. An accompanying device for a stringed musical instrument having a neck with frets spaced longitudinally thereon and strings spaced laterally thereacross comprising in combination a container slidably mounted on said neck for positioning longitudinally along said strings at different fret positions, said container having disposed therein a group of selector keys for producing musical tones, a means for attaching said accompanying device to the neck of said stringed instrument, said attachment means comprising a flexible band to be tightened about the neck of said string instrument, said flexible band interacting with tightening arms having flat and bent ends, said



arms pivoting about respective plates of said container having holes to support said arms, said arms pivoting and exercising their tightening action by pulling on the ends of the flexible band when their straight ends are depressed by a tightening lock nut.

4,331,060

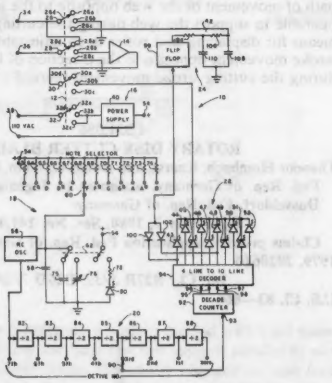
MUSICAL INSTRUMENT TUNING DEVICE

Ollie J. Allen, Ellicott City, Md., assignor to Rex Ollie Allen, Baltimore, Md.

Continuation of Ser. No. 24,657, Mar. 28, 1979, abandoned. This application Oct. 10, 1980, Ser. No. 195,769

Int. Cl.³ G10G *7/02*

U.S. Cl. 84—454 **13 Claims**



1. A device for use in tuning the frequency of a musical instrument output signal to a given predetermined frequency comprising an oscillator and a plurality of impedance elements each of which may be coupled to the oscillator for enabling said oscillator to provide a corresponding plurality of output frequencies which are predetermined even-numbered multiples of a corresponding plurality of respective predetermined frequencies comprising an equal tempered chromatic scale of frequencies including said given predetermined frequency, a fixed capacitance element, a variable capacitance element, and capacitance selection switch means for coupling said fixed capacitance element to the oscillator to provide a fixed frequency upon which said equal tempered chromatic scale is based or for coupling said variable capacitance element to said oscillator to provide a variable frequency upon which said equal tempered chromatic scale is based, said variable capacitance element having a midrange capacitance value equal to the capacitance value of said fixed capacitance element to

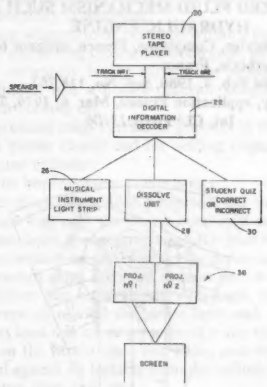
permit the varying of said frequency upon which said chromatic scale is based above or below said fixed frequency; selector means for coupling one of said impedance elements to the junction of the oscillator with the selected capacitance element for causing said oscillator to provide an output frequency which corresponds to said given predetermined frequency; an amplifier adapted to be coupled selectively to one of the musical instrument output signal and an external frequency standard signal and arranged to convert the waveform of the signal coupled thereto to a square wave; and indicating means including a plurality of light-emitting diodes, each having an anode and a cathode, the anodes of said light-emitting diodes being coupled to said oscillator and the cathodes of said light-emitting diodes being coupled to said amplifier, said indicating means being arranged for causing said light-emitting diodes to emit light for indicating when the frequency of the oscillator exactly equals the predetermined multiple of the frequency of the signal coupled to said amplifier thereby selectively permitting either tuning of said musical instrument in accordance with said fixed frequency or tuning of said oscillator in accordance with said external frequency standard signal.

4,331,061

METHOD AND APPARATUS FOR TEACHING MUSICAL INSTRUMENTS

John P. Morgando, 3909 El Conlon, Las Vegas, Nev. 89102

Filed Aug. 21, 1978, Ser. No. 935,345
Int. Cl.[3] G09B *15/04*
U.S. Cl. 84—470 R **2 Claims**



1. An audio visual apparatus for enabling a single instructor at a Teacher's Console to simultaneously teach a plurality of students at their individual learning centers how to play a musical instrument comprising:

a multi-channel magnetic tape play-back system for transmitting signals recorded on multi-channel tape;

a multi-channel tape having a first channel containing predetermined audio inputs for communicating a predetermined sequence of aural instructions, audible information and audible quiz questions to each student;

a second channel of said multi-channel tape containing coded impulses in the form of digital signals for activating and deactivating various elements of said audio visual apparatus;

a screen;

two projectors activated by certain of said digital signals output by said second channel of said play-back system for displaying on said screen a sequence of pictures to the students, said sequence of pictures being previously arranged to present a lesson of instruction and quiz questions to the students;

a plurality of student learning centers each including a musical instrument and a student light strip comprising a plurality of lights aligned in a strip and arranged such that each light corresponds to a musical note or a position on said musical instrument for the student to manually manipulate in order to play a desired note or combination of notes;

a teacher's console including:

microphone means including a first set of actuating switches operationally connected to each of said plurality of student learning centers for optionally selecting and speaking to at least one student by the instructor,

sound monitoring means including a second set of actuating switches operationally connected to said instrument at each of said plurality of student learning centers and usable by the instructor for optionally selecting and listening to an individual's musical performance,

a master instrument coupled with said plurality of lights of each of said plurality of student learning centers including a third set of actuating switches operationally connected to each of the plurality of student learning centers for optionally selecting and activating said plurality of lights associated with at least one student's learning center in accordance with the notes played by the instructor on said master instrument,

quiz monitoring means operationally connected with each of said plurality of student learning centers to identify those learning centers where correct or incorrect answers are given by the student,

switch control means coupled to said play-back system and said projectors for stopping the progress of the programmed teaching whenever the instructor desires to interrupt and optionally use said microphone means or said master instrument to explain or supplement the programmed teaching, said switch control means including means for selectively stopping, skipping forward, or skipping backwards to selectively coordinate the programmed teaching with the optional interruption by the instructor;

said plurality of student learning centers also including:

student speaker means directly coupled to said first channel of said play-back system for communicating prerecorded verbal instructions and audible information and coupled to said microphone means for communicating live verbal instructions from the instructor to the students;

a set of earphones connected to said speaker means to enable the student to clearly hear the signals output by said speaker means without hearing extraneous and distracting noises generated by the other students;

means connecting said musical instrument with said student speaker means and with said sound monitor means to enable the student to hear his own musical performance on said instrument and to enable the instructor to optionally listen to said student's musical performance;

a quiz response panel including a plurality of buttons for use by a student to indicate his answers to said quiz questions posed periodically by said pictures and/or said pre-recorded audible information on said first channel of said tape, said quiz response panel also including quiz result display lights activated by certain of said digital signals to indicate whether such answers are correct;

a decoder connected to said second channel of said play-back system and to said projectors, said plurality of lights and said quiz response panel for decoding said digital signals and activating said projector units, said plurality of lights, and said quiz results display lights, in correlation with the pre-recorded instructions and information on the first channel of said multi-channel tape;

a dissolve unit connected to said digital information decoder and said projectors, said dissolve activated by said decoder to alternately phase in a picture from one projector and phase out a picture from the other projector over different pre-determined dissolve periods; and,

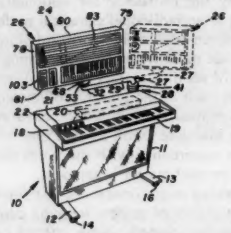
printed lesson materials included with each of said student learning centers and with said teacher's console, said materials correlated with said programmed teaching to enable the instructor and students to follow the lesson.

4,331,062

VISUAL NOTE DISPLAY APPARATUS

Allen E. Rogers, 2105 6th Ave., NE., Owatonna, Minn. 55060

Filed Jun. 2, 1980, Ser. No. 155,499
Int. Cl.³ G09B *15/08*
U.S. Cl. 84—478 **6 Claims**



1. Music instruction apparatus comprising,

a piano having a housing, a keyboard with a plurality of keys, and an electronic means producing an output corresponding to one or more depressed keys,

music note display means including a panel having a grand staff indicia, a vertically disposed series of first light means corresponding to chord note information coordinated with said indicia, a series of second light means diagonally coordinated with said staff indicia and corresponding to an ascending scale note scale information, a keyboard representation located directly below the second light means, said keyboard representation having piano key indicia vertically aligned with second light means whereby a piano key indicia is vertically aligned with each ascending note, and a series of third light means associated with each of said keyboard indicia,

a tubular support arm, means mounting said arm on the housing of said piano and connecting said arm to said display means for permitting rotational movement of said display means about a generally vertical axis through substantially 180° thereby to locate said display means in a selected adjustable position for ready viewing by persons proximate to the piano,

and, electric circuit means selectively connected to said first, second, and third light means and to said electronic means of said piano, and including elements extending through said tubular support whereby, when a key of the piano is depressed, at least a selected one of the first, second, and third light means is turned on corresponding to said depressed key.

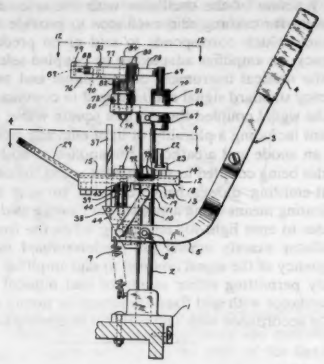
4,331,063

CARTRIDGE RELOADING PRESS

Gordon N. Schaenzer, 11737 N. Solar Ave. 77W, Mequon, Wis. 53092

Filed Jun. 2, 1980, Ser. No. 155,072
Int. Cl.³ F42B *33/02*
U.S. Cl. 86—36 **12 Claims**

1. An apparatus for reloading spent ammunition shells having a base, a shaft mounted on said base which extends upwardly therefrom, a carriage supported on said shaft and movable up and down thereon, a means for moving said carriage up and down on said shaft relative to said base, a plurality of tools supported on said shaft defining a plurality of reloading stations spaced circumferentially about the shaft, one of said reloading stations being a repriming station having a priming tool, and a shell holder plate supported by the carriage for coincident vertical movement therewith and for manual rotation about the shaft, said plate adapted to receive a plurality of



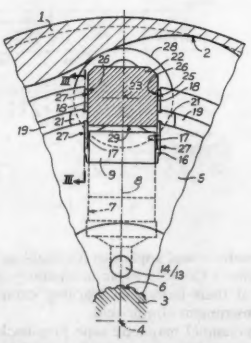
separate spent ammunition shells and to position such shells simultaneously and sequentially in different reloading stations.

4,331,064

PRESSURIZED FLUID MECHANISM SUCH AS A HYDRAULIC ENGINE

Jean-Francois Cheylus, Compiegne, France, assignor to Poclain Hydraulics, Verberie, France

Filed Feb. 4, 1980, Ser. No. 118,752
Claims priority, application France, Mar. 6, 1979, 79 05771
Int. Cl.³ F01B *13/06*
U.S. Cl. 92—58 **6 Claims**



1. A pressurized hydraulic fluid mechanism comprising:

a cam;

a cylinder block mounted for rotation with respect to the said cam about a rotation axis and including at least one cylinder in said cylinder block;

at least one piston mounted for axial sliding in said cylinder;

a girder operatively coupling said piston to said cam,

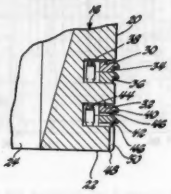
said girder slidably mounted inside a radial cut formed in said cylinder block, the walls of said cut forming an extension of said cylinder;

said girder positioned adjacent to said walls parallel to the axis of said cylinder;

a removable strip interposed between each wall of the cut and the portion of girder facing it, said strips each fixed on one said wall of the cylinder block or on said girder, the surface of at least one of said wall on which is fixed said

strip or the face of said strip which faces said wall having a degree of roughness of at least
0.25 μRa
15 μRt
8 μRp.

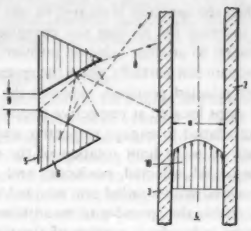
4,331,065
ENGINE PISTON ASSEMBLY WITH IMPROVED OIL CONTROL
Michael Fellberg, Grosse Ile, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 18, 1979, Ser. No. 85,947
Int. Cl.³ F16J 1/08
U.S. Cl. 92—158 **4 Claims**



1. A piston assembly providing improved oil control and air sealing for a ported cylinder internal combustion engine, said piston assembly comprising
a piston adapted to be received within a ported engine cylinder and having closed and open ends, an outer wall having an outwardly facing surface for engagement with such cylinder, and a hollow interior adapted to be supplied with cooling oil,
compression rings carried in grooves in the outer wall near the piston closed end for sealing engagement with such engine cylinder,
and the improvement comprising
a pair of axially spaced peripheral oil ring grooves in the outer wall near the piston open end, said wall being free from drain openings through the wall to the hollow interior in the vicinity of said ring grooves,
oil control rings received at least one in each of said ring grooves for engagement with such engine cylinder to scrape oil toward the piston open end,
said at least one oil ring received in the ring groove furthest from the piston open end being non-vented to provide a seal against air leakage from the cylinder ports toward the piston open end, and
said at least one oil ring received in the ring groove nearest the piston open end being vented to aid drainage of oil toward the piston open end, and
relief recess means in said outer wall surface and extending from the piston open end to the closest oil ring groove to provide free drainage from the lower ring groove for oil scraped from the cylinder by the oil control rings.

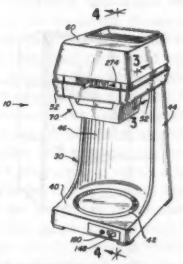
4,331,066
DEVICE FOR AIR CONDITIONING A CLOSED SPACE
Hans Schmidlin, Aesch, Switzerland, assignor to Eltreva AG, Aesch, Switzerland
Filed Jun. 15, 1979, Ser. No. 49,044
Int. Cl.³ E06B 7/02
U.S. Cl. 98—96 **6 Claims**

1. A device for air conditioning a closed space provided with a double-pane window, comprising an air outlet channel formed between the outer pane and the inner pane of said window and communicating at one end thereof with said closed space; a sun drape arranged in said closed space opposite said inner pane, wherein the surface of said sun drape facing said inner pane has horizontally directed sun rays reflecting strips having a triangular cross-section to reflect the sun rays passing through said window at a high angle back to the latter; means for producing a substantially laminar flow of air from said closed space in said outlet channel; the interspace between said sun drape and said inner pane being provided



with suction air openings and with control means for adjusting the clearance of said openings in response to a position of the sun drape relative to said inner pane; and said suction air openings communicating with said air outlet channel.

4,331,067
COFFEEMAKER
James C. Mysicka, Berwyn; Ralph C. Stern, LaGrange Park, and Robert J. Augustine, Downers Grove, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Dec. 22, 1980, Ser. No. 219,191
Int. Cl.³ A47J 31/00
U.S. Cl. 99—305 **5 Claims**



1. In a coffeemaker of a type comprising
(a) a source, which is adapted to supply a measured quantity of heated water,
(b) a basket, which is adapted to hold a measured quantity of coffee grounds and to receive heated water from the source, so as to yield an infusion from the grounds as infused by heated water from the source, and which is adapted to filter the grounds from the infusion and to discharge the infusion,
(c) a spreader, which covers the basket, so as to be interposed between the source and the grounds held by the basket, and which is perforated, so as to pass heated water from the source over the grounds, and
(d) a receptacle, which is adapted to receive the infusion being discharged from the basket,
an improvement wherein the spreader fits into an upper portion of the basket, so as to be disposed above the grounds held by the basket, wherein an outer wall of the spreader and an inner wall of the upper portion of the basket are curved about a vertical axis, so as to enable the spreader to be rotated about the vertical axis, wherein the basket is provided with a peripheral shelf having an outer wall, opposite end walls, and an annular floor, which has an arcuate slot opening outside the basket and extending over a portion of the annular floor near

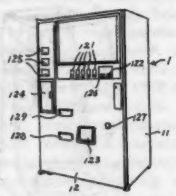
one end wall of the peripheral shelf, wherein the spreader is dished, so as to receive the water from the source, wherein the spreader has a peripheral aperture opening onto the peripheral shelf, wherein the spreader has an integral lip overlying the annular floor of the peripheral shelf and being movable arcuately as the spreader is rotated, so as to cover the arcuate slot completely when the spreader is rotated to one selected position, so as to uncover the arcuate slot completely when the spreader is rotated to another selected position, and so as to uncover the arcuate slot partially when the spreader is rotated to intermediate selected positions, wherein the spreader has integral radial stops located at respective opposite ends of the integral lip and adaped to engage respective end walls of the peripheral shelf, so as to limit rotation of the spreader to a range including said selected positions, and wherein the spreader is provided with a radial arm adapted to be manipulated, so as to enable the spreader to be adjusted among said selected positions, whereby a portion of the water from the source bypasses the grounds when the spreader is adjusted to any selected position where the integral lip does not cover the arcuate slot completely, and whereby relative proportions of the water bypassing and not bypassing the grounds can be adjusted.

4,331,068

CONTROL CIRCUIT FOR AUTOMATIC COOKING APPARATUS

Makoto Asami, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Continuation of Ser. No. 693,904, Jun. 8, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,312
Claims priority, application Japan, Jun. 10, 1975, 50-69191
Int. Cl.[3] A47J *27/00*
U.S. Cl. 99—325 **13 Claims**



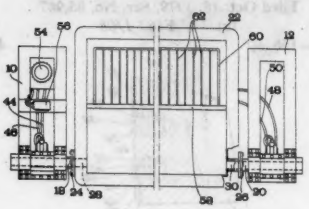
1. In an apparatus for cooking processed foods which includes a plurality of manually operated cook selectors corresponding to a plurality of different cooking conditions requiring different amounts of boiled water, and a plurality of means for discharging a quantity of boiled water, a control circuit comprising a plurality of timer means respectively coupled to said cook selectors and started by the operation of a corresponding one of said cook selectors, a plurality of means for operating said boiled water discharging means respectively coupled to the outputs of said timer means, and first diode means connected between the output of a predetermined first one of said timer means and the output of a predetermined second one of said timer means and coupling, in addition to a first one of said operating means coupled with said first one of said timer means, a second one of said operating means coupled with said second one of said timer means with the output of said first one of said timer means so that a first one of said boiled water discharging means corresponding to said first one of said operating means as well as a second one of said boiled water discharging means corresponding to said second one of said operating means are both operated at a time when said first one of said timer means is started by a corresponding one of said cook selectors to discharge a predetermined quantity of boiling water within a specified time period.

4,331,069

CURD MAKING AND SEPARATING MACHINE

Stefano Tomatis, Via Provinciale 106/a, Frazione San Lorenzo, 12016 Peveragno (Cuneo), Italy

Filed Apr. 16, 1980, Ser. No. 140,743
Claims priority, application Italy, Feb. 26, 1980, 67291 A/80
Int. Cl.[3] A01J *15/04, 25/00*
U.S. Cl. 99—456 **4 Claims**



1. In a curd making and separating machine for producing curds from milk and separating the curds from the whey, said machine having a hollow vat open at the top, the combination comprising:

(a) a vat having an upper portion of rectangular cross section and a lower portion in the shape of a semi-cylindrical trough, said vat having two spaced, parallel end walls extending from the bottom of the trough to the top of the upper portion of the vat and two spaced, parallel longitudinal walls connected to the end walls and extending tangentially from the trough to the top of the upper portion of the vat, the end walls and longitudinal walls having upper edges defining a rectangular opening for the vat;

(b) a shaft supported rotatably by the end walls internally of the vat intermediate of the longitudinal walls;

(c) a curd cutting harp affixed to the internal shaft and comprising a generally rectangular open frame mounting a plurality of spaced curd cutting elements, said harp extending radially from the shaft and having a length along the shaft slightly shorter than the distance between the two end walls and a width slightly shorter than the internal radius of the semi-cylindrical trough;

(d) drive means mounted externally of the vat for driving said internal shaft;

(e) two spaced coaxial stub shafts mounted proximate and parallel to one of the longitudinal walls adjacent the rectangular opening of the vat, one stub shaft being affixed to one end wall of the vat and the other stub shaft being affixed to the opposite end wall of the vat, said stub shafts providing an offset axis of rotation for the vat;

(f) a pair of spaced, external support members for the vat, each said support member being located adjacent one of the end walls and having bearing means for supporting rotatably one of the stub shafts; and

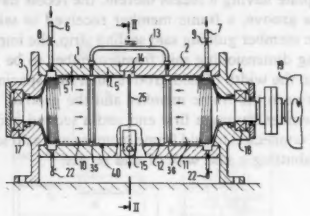
(g) actuating means mounted on at least one of the support members for actuating said stub shafts to tilt the vat selectively about the offset axis of rotation to a wheying off position, or to a curd dumping position, or to an upright curd producing position wherein the rectangular opening of the vat lies in a substantially horizontal place above the semicylindrical trough.

4,331,070

APPARATUS FOR HEATING LIQUIDS, IN PARTICULAR FOODSTUFFS AND LUXURY FOODSTUFFS, FOR THE PURPOSE OF PASTEURIZATION, STERILIZATION AND THE LIKE

Viktor Denk, Buchenstrasse 12, 8051 Kranzberg, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,258
Int. Cl.³ A23C 3/02
U.S. Cl. 99—483 15 Claims



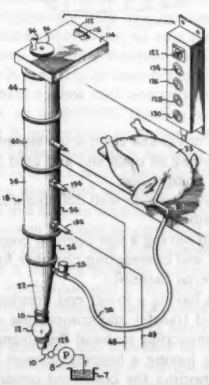
1. In an apparatus for heating up liquids, in particular foodstuffs and luxury foodstuffs, for the purpose of pasteurization, sterilization and the like, including a housing having a hollow sleeve, a rotor which is rotatably supported in the hollow sleeve and is spaced by an annular clearance space from the interior surface of the hollow sleeve, means for feeding to the annular clearance space in the region of the two sleeve ends the liquid to be treated, and means for discharging the liquid, which is heated up by internal friction, from the center region of the housing, the improvement comprising wherein the rotor has the form of a roller having two end parts and a center part, and wherein the peripheral surfaces of at least the two end parts of the roller are each provided with a conveyor thread.

4,331,071

BASTING INJECTOR AND CONTROL MEANS

Paul L. Niccolls, 920 E. Villa Marie, Springfield, Mo. 65803

Filed May 21, 1980, Ser. No. 152,083
Int. Cl.³ A23L 1/31, 3/34
U.S. Cl. 99—532 2 Claims



1. A basting injector comprising:

a reservoir containing a quantity of liquid basting material;

a hollow housing including a hollow cylindrical dispensing chamber;

a dispensing piston and rod mounted for reciprocation in said cylindrical chamber portion;

power cylinder means having a power rod extending from said power cylinder means and connected to said dispensing piston and rod;

a supply conduit connected on one end to said reservoir and on an opposite end to an inflow opening in said housing and dispensing chamber;

a flexible hose having one end communicating with said housing and dispensing chamber at a location between said cylindrical chamber portion and said inflow opening and an opposite end connected to an injector needle assembly;

a source of compressed air;

pneumatic control means for connecting said source of compressed air to said power cylinder to cause movement of said dispensing piston in a first direction to draw basting liquid into said dispensing chamber from said fill conduit on in a second direction to effect the dispensing of basting material from said dispensing chamber into said flexible conduit; said pneumatic control means including a two-position dispense actuate valve connected to said source of compressed air, a manual mode select valve selectively positionable in a circulate position or an operate position, a power supply line extending from one side of said manual mode select valve to said dispense actuate valve, a double pilot control valve having a left pilot valve and right pilot valve operable for positioning said double pilot control valve in first or second positions respectively, a circulate mode supply pneumatic line extending between said manual mode select valve and said double pilot control valve, spring means associated with said left pilot valve for normally maintaining said left pilot valve in a first position, spring means for normally maintaining said right pilot valve in a first position, a left pilot line connecting said left valve to said circulate mode supply line, a right pilot line connecting said right pilot valve to said circulate mode supply line, a left pilot chamber and a right pilot chamber respectively associated with said double pilot control valve for receiving pressurized air respectively from said left pilot valve and said right pilot valve, said left pilot valve and said right pilot valve each having a pilot chamber which, when subjected to a predetermined pressure, is operable to overcome the force of said spring means associated with said left pilot valve and said right pilot valve respectively, a left shuttle valve line and a right shuttle valve line respectively connected on one end to said double pilot control valve, a left pilot valve, a second power cylinder line connected between said right shuttle valve and the rod end of the power cylinder, a first shuttle shift pilot line connected between the right shuttle valve line and one side of said right shuttle valve tending to move said right shuttle valve into a first position in which said right shuttle valve line is placed in communication with said second power cylinder line, a second shuttle shift pilot line connecting said dispense mode supply line with an opposite end of said right shuttle valve wherein pressure in said dispense mode supply line tends to move said right shuttle valve to a second position in which said dispense mode supply line is connected to said second power cylinder line and lastly including selectively operable flow regulator means connected to said double pilot control valve for regulating the flow of exhaust air from said power cylinder;

adjustable stop means for limiting the extent of movement of said power cylinder and said dispensing piston in said first direction to permit adjustment of the amount of liquid basting material drawn into said dispensing chamber in accordance with a predetermined value dependent upon the weight of the object into which the liquid basting material is to be injected;

a check valve in said supply conduit for permitting flow of basting material from said reservoir to said fill conduit while preventing reverse flow back to said reservoir; and

indicator means for indicating the amount of liquid basting material that can be drawn into said dispensing chamber for any adjusted position of said abutment means.

4,331,072
DEGERMING OF MAIZE

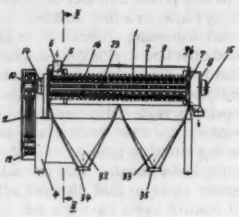
Roman Müller, Niederuzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 12,159, Feb. 14, 1979, abandoned, which is a division of Ser. No. 944,321, Sep. 21, 1978, Pat. No. 4,229,486. This application Sep. 19, 1980, Ser. No. 188,822

Claims priority, application Switzerland, Sep. 30, 1977, 11958/77

Int. Cl.³ B02B *3/08*

U.S. Cl. 99—606 **21 Claims**



1. Apparatus for degerming maize comprising:

(a) a substantially circular working housing having an inlet aperture at one end and an outlet aperture at the other end;

(b) a rotor mounted for relatively rapid rotation in the housing about an axis, the rotor and a wall of the housing forming an annular working chamber therebetween, wherein maize enters the working chamber through the inlet aperture;

(c) a relatively large number of blades carried by the rotor, each blade having two oppositely facing, spaced sides which extend along the blades generally radially from the rotor and terminate proximate the wall of the housing, and a generally planar surface which intersects the spaced sides along their radial lengths to define two discrete degerming edges, one at each intersection of said generally planar surface with said spaced sides, said edges being spaced far enough apart such that each edge is able to independently act on the maize and separate the germ from the endosperm of the maize; and

(d) wherein the housing is perforated with perforations of sufficient size such that the separated germ passes out of the working chamber through the perforated housing while the degermed maize and any undegermed maize is retained in the housing to pass out of the working chamber through the outlet aperture.

4,331,073
PRESSURE APPLICATION APPARATUS

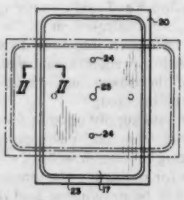
Umberto Girola, Monza, Italy, assignor to Firma Theodor Hymmen KG., Bielefeld, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,682

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2937971

Int. Cl.³ B30B *5/04*

U.S. Cl. 100—154 **7 Claims**



1. In an apparatus for applying a surface pressure to progressively moving workpieces such as chipboard panels, or the like, having at least one rotating pressure application belt having a workpiece-carrying surface and an opposed surface and means for applying pressure to said belt to cause said belt to apply pressure to said workpiece, said pressure application means having a sealing strip in sealing abutment with said opposed surface of said belt, said sealing strip together with said belt forming part of a pressure chamber into which a pressure medium is induced, guide means for guiding said sealing strip, said guide means comprising a pressure plate, said pressure plate having a recess therein, the recess having walls defining a groove, a frame member received in said groove, said frame member guiding said sealing strip, the improvement comprising dimensioning said frame member to be smaller in width than the width of said groove such that spacing is maintained between the frame member and the groove, a resilient sealing member having a first end and a second end, the first end being connected to said frame member and said second end slidingly abutting a said wall of said recess.

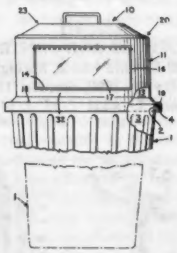
4,331,074
COVER AND COMPACTING ASSEMBLY FOR TRASH CANS

Rafik R. N. Behman, 115 Magnolia Ave., Jersey City, N.J. 07306

Filed Nov. 3, 1980, Ser. No. 203,351

Int. Cl.³ B30B *15/30*

U.S. Cl. 100—215 **19 Claims**



1. A combined cover and compactor assembly for mounting on a container having an open end and used for holding compactible material comprising:

a. a housing having a side wall defining a transfer and compacting chamber,

b. said side wall having a side opening communicating with said transfer and compacting chamber for charging compactible material thereinto,

c. said housing having a lower end opening in communication with said transfer and compacting chamber for discharging compactible material therefrom,

d. said housing having a housing support about the lower end for connecting the combined cover and compactor assembly to the open end of said container,

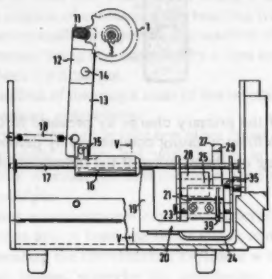
e. retaining means located at the end of said housing remote from the lower end opening, and

f. a compactor detachably connectible in said retaining means and to be disengaged therefrom for downward movement to exert compacting forces upon collected compactible material in said transfer and compacting chamber.

4,331,075
VALUE SETTING MECHANISM, PARTICULARLY FOR FRANKING MACHINES

Thomas D. Williams, Billericay, England, assignor to Vickers Limited, London, England

Filed Feb. 4, 1980, Ser. No. 118,322
Claims priority, application United Kingdom, Feb. 5, 1979, 7903987
Int. Cl.³ B41J 7/08, 7/96, 29/70; B41L 47/56
U.S. Cl. 101—91 7 Claims

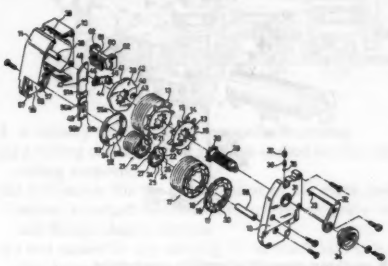


1. A value setting mechanism comprising mechanism function controlling means, a plurality of coaxially mounted relatively rotatable members each having a series of operative positions about its axis respectively representing digital values upon which the performance of a function controlled by said mechanism is to depend, and each said rotatable member being formed with a series of peripheral recesses allocated to the digital values, whereby each said recess on any said rotatable member takes up a predetermined fixed position when that rotatable member is set to the operative position corresponding to the digital value associated with the recess, a locking member mounted for to and fro movement between a first position withdrawn from said rotary members and a second position engaged in said rotatable member peripheral recesses for holding said rotatable members stationary, loading means yieldably thrusting said locking member to said second position, said locking member and said recesses being formed for said locking member simultaneously fully to enter one recess in each said rotatable member only when all said rotatable members are set to operative positions wherein each value for each rotatable member is precisely or unambiguously set at a digital value, and to be held against such entry by any said rotatable member when in an inoperative position wherein said any rotatable member is imprecisely or ambiguously set at a non-digital value, a rockable trip member having a rocking member extending outwardly from a pivot axis of said trip member, said trip member being associated with said mechanism function controlling means in a manner such that initiation and continuation of the mechanism function is controlled according to the position of said trip member, said trip member being mounted to move between a holding position completely preventing operation of said mechanism and a releasing position permitting operation of said mechanism, and a detent unit operatively connected to said locking member to move simultaneously with said locking member and mounted to slide linearly between a first position overlapping a portion of said trip lever rocking member to maintain said trip member in its holding position when said locking member engages a said rotatable member outside said recesses therein and to engage another portion of said trip member rocking member to be held by said rocking member, when in said releasing position, in a position that holds said detent unit and thereby said locking member in recesses respectively in said rotatable members, whereby said detent unit completely prevents operation of the machine when said locking bar is not properly located in said recesses and also locks said locking bar properly in said recesses once machine operation is begun.

4,331,076
BAR CODE PRINTING DEVICE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Jun. 10, 1980, Ser. No. 158,320
Claims priority, application Japan, Jun. 15, 1979, 54-82601[U]
Int. Cl.³ B41K 1/12, 1/42
U.S. Cl. 101—110 20 Claims



1. A bar code printing device, comprising:

a plurality of index rings juxtaposed to one another in a manner to rotate independently of one another;

a selecting member for selectively engaging any of the index rings and for then rotating the engaged index ring to a desired rotative position;

a plurality of bar code type rings juxtaposed to one another in a manner to rotate independently of one another, and each of the bar code type rings being connected to a respective one of the index rings, such that rotation of the index ring rotates the bar code type ring to a respective desired rotative position; the bar code type ring having bar code types formed thereon which are arrayed annularly around the bar code type ring;

a thrust member located at an end of the plurality of type rings and being movable axialy of the type rings; the thrust member being of yieldable, elastic construction for engaging the end of the plurality of type rings to bias the type rings together; means for opposing the bias of the thrust member and acting on the other end of the plurality of type rings, whereby the thrust member may bias the type rings together;

an actuating member in engagement with the thrust member, and the actuating member and the thrust member being respectively so shaped that movement of the actuating member in a first direction urges the thrust member toward the plurality of type rings and movement of the actuating member in a second direction frees the thrust member to relax its elastic bias of the plurality of type rings, which frees the type rings to move apart, thereby freeing the type rings to be individually rotated; the actuating member including a rack thereon that moves therewith;

a rotary member positioned for selective engagement by the selecting member and, upon such engagement, the rotary member being rotatable by the selecting member;

the rotary member including means which rotate with the rotary member and which engage the rack for moving the actuating member in the first direction upon rotation of the rotary member in a third direction and for moving the actuating member in the second direction upon rotation of the rotary member in a fourth direction opposite the third direction.

4,331,077

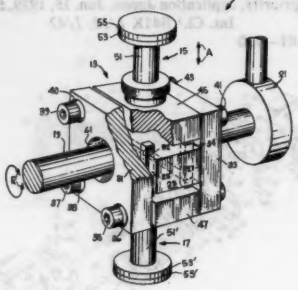
PRINTING ELEMENT WITH SHOCK ABSORBER FEATURE

Paul J. Sokolovsky, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 29, 1979, Ser. No. 88,890

Int. Cl.³ B41F *1/04, 1/56*

U.S. Cl. 101—298 **9 Claims**



1. A marking element assembly comprising,

a reciprocating motion source providing motion to and from an object to be marked,

a yoke connected to said motion source having a yoke shaft mounted therein, said yoke shaft carrying a marking element projecting outwardly from said yoke toward said object to be marked, and

a shock absorption means including a slider block connecting said motion source to said yoke for fixing the position of said yoke shaft relative to said motion source when said marking element is not in contact with an object to be marked and freeing said yoke and yoke shaft for motion relative to said motion source when said marking element is in contact with an object to be marked, said slider block movable within said yoke in an interior channel thereof defined by sidewalls of the yoke, the slider block having surfaces for sliding friction contact with opposed yoke sidewalls, said opposed yoke sidewalls including pressure means for varying sidewall spacing relative to said slider block whereby the amount of sliding friction contact between said sidewalls and said slider block may be varied, whereby energy from said motion source is dissipated in said shock absorption means after contact between the marking element and the object.

4,331,078

INSTANTANEOUS DETONATOR WITH INSERT MEMBER WITHIN FUZE CASING

Wolfgang Habbel; Josef Prior, both of Troisdorf; Hans Schulte, Siegburg, and Christoph Voges, St. Augustin, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

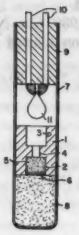
Filed Jun. 11, 1979, Ser. No. 47,079

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825742

Int. Cl.³ F42B *3/10*

U.S. Cl. 102—202.11 **8 Claims**

1. An instantaneous detonator comprising a detonator casing containing a primary charge and a secondary charge and having fuze wires extending from outside the casing to an ignitor system located within walls of the casing, an insert number disposed in the detonator casing, said member having a continuous axial passage extending therethrough which includes a cross-sectional constriction means and a charge chamber that contains the primary charge and that faces the secondary charge located within said casing, said insert member having a thick-walled section at least in the portion thereof laterally surrounding the charge chamber which is thicker than adjacent walls of said casing and said constriction means prevent-



ing ignition of the primary charge by pressure forces exerted by air in the detonator casing compressed by detonation of an explosive acting on the exterior of the detonator casing.

4,331,079

PROCESS FOR JOINING A PLUG AND FUZE WIRES FOR ELECTRICAL DETONATORS

Walter Bajohr, Troisdorf, and Hildebert Wuckel, Troisdorf-Spich, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,743

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824568

Int. Cl.³ F42C *11/00*

U.S. Cl. 102—202.12 **7 Claims**

1. A process for joining a plug and fuze wires for electrical detonators, especially electrical fuzes, comprising a casing and a plug of resinous material arranged therein, through which plug extend at least two insulated fuze wires having uninsulated ends that are electrically connected on the inside of the casing to an igniter system, which comprises twisting the at least two insulated fuze wires together to form a twisted zone at least at the portions of the wires to be received within the plug, and forming a plug of resinous material around the twisted zone whereby the at least two twisted wires are anchored within the plug and forces acting on the wires located outside the casing are not transmitted to the igniter system located at the ends of the fuzed wires within said casing.

4,331,080

COMPOSITE HIGH EXPLOSIVES FOR HIGH ENERGY BLAST APPLICATIONS

Martin M. West, Philadelphia, and Peter D. Zavitsanos, Norristown, both of Pa., assignors to General Electric Co., Philadelphia, Pa.

Filed Jun. 9, 1980, Ser. No. 157,901
Int. Cl.³ F42D 1/00; C06B 25/34, 43/00
U.S. Cl. 102—301 28 Claims

1. A composite explosive comprised of conventional explosive material and a mixture of boron and at least one other metal, the at least one other metal being a metal or metals which are capable of exothermically reacting with the boron to yield an intermetallic compound, the reaction of boron and the metal or metals being accompanied by a heat energy release of at least about 1.0 kcal/gm.

23. A method of forming a mass of hot or molten particles in an environment, comprising:

(a) mixing boron and at least one other metal which forms an intermetallic compound with boron in an exothermic reaction wherein the heat energy release is at least about 1.0 kcal/gm;

(b) adding a conventional explosive material to the mixture of boron and at least one other metal; and,

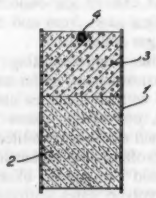
(c) detonating the conventional explosive with suitable detonating means, whereby the exothermic reaction of the mixture of boron and at least one other metal is initiated by the detonation of the conventional explosive material to form particles of hot intermetallic compound which are dissipated by the shock wave of the detonated conventional explosive.

4,331,081

EXPLOSIVE BOOSTER

Joseph A. R. Cloutier, Montreal, and Anthony C. F. Edmonds, Mont St. Hilaire, both of Canada, assignors to C-I-L Inc., Willowdale, Canada

Filed Jul. 25, 1980, Ser. No. 172,163
Int. Cl.³ F42B 3/00
U.S. Cl. 102—318 8 Claims



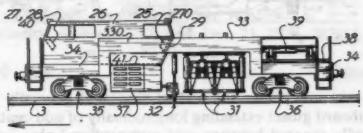
1. A cast booster for detonating insensitive blasting charges and containing trinitrotoluene as the sole explosive ingredient, which booster is sensitive to initiation by blasting cap, the said booster comprising an elongate structure of solidified trinitrotoluene having a cap-insensitive dense end portion and an opposite cap-sensitive less dense end portion, the density of the trinitrotoluene at the less dense end being not greater than one megagram per cubic meter and the density throughout the elongate structure having a gradually increasing value from the less dense cap-sensitive end to the dense cap-insensitive end.

4,331,082

RAILWAY TRACK TAMPER

Sandro Pasquini, La Tour-de-Peilz, Switzerland, assignor to SIG Societe Industrielle Suisse Industrieplatz, Neuhausen-Chutes du Rhin, Switzerland

Filed Jan. 31, 1980, Ser. No. 117,370
Claims priority, application Switzerland, Feb. 23, 1979, 1803/79
Int. Cl.³ E01B 27/17
U.S. Cl. 104—12 6 Claims



1. A railway track tamping machine comprising:

(a) a rolling chassis having a bridge-shaped portion and two rolling supports;

(b) tool means for the displacement of the track, said tool means arranged between said rolling supports beneath said bridge-shaped portion;

(c) tool means for the tamping of the track, said tool means also arranged between said rolling supports beneath said bridge-shaped portion, said tamping tool means being located behind said displacement tool means with respect to the working direction of advance of the machine;

(d) a single cab means arranged at the front of said rolling chassis with respect to said working direction of advance, said single front cab means extended towards the rear up to at least above said displacement tool means for affording view over said displacement tool means and said tamping tool means;

(e) a device for establishing and verifying the amplitude of the displacements of the track which are obtained at the level of said displacement tool means;

(f) an extension formed on said bridge-shaped portion of the rolling chassis, said extension extended at least along the rear part of said single front cab means;

(g) power station means arranged below said extension;

(h) a control station means for the movements of said tamping and displacement tool means, said control station means arranged in said single front cab means;

(i) a prescribed value setting and posting station means for said track displacement amplitude establishing and verifying device, said station means arranged in said single front cab means; and

(j) driving station means also arranged in said single front cab means.

4,331,083

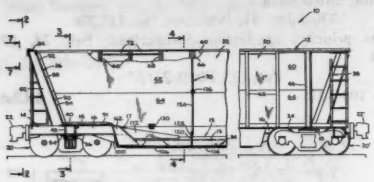
DROP CENTER GONDOLA CAR

Robert J. Landregan, Portland, and Gary S. Kaleta, Warren, both of Oreg., assignors to FMC Corporation, Chicago, Ill.

Filed Jun. 21, 1979, Ser. No. 50,837
Int. Cl.³ B61D 3/00, 7/00, 17/10
U.S. Cl. 105—406 R 5 Claims

1. In a railway car, a drop center sill comprising a pair of spaced stub center sill end portions, a drop center intermediate portion, and means defining transition sections connecting said stub center sill end portions to said drop center intermediate portion of said center sill for providing a center sill having sufficient strength to accommodate about three-quarters of longitudinal loads acting on the car, each transition section comprising a pair of generally trapezoidal gussets rigidly secured to side walls of one of said stub center sill portions and said drop center portions of said center sill; a floor plate rigidly secured to an inner end of said one center sill portion, to said drop center portion, and to said trapezoidal gussets; an elon-

gated U-shaped inboard gusset extending longitudinally of said center sill and rigidly secured between said floor plate and said drop center portion of said center sill; an outboard end plate rigidly secured to outer edges of said drop center portion and



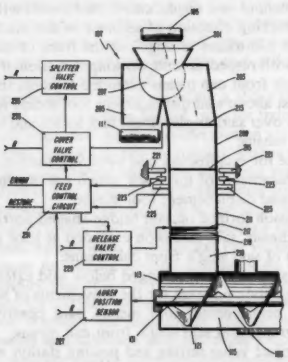
to said stub center sill, and an elongated generally U-shaped outboard gusset extending longitudinally of said center sill and rigidly secured between said outboard end plate and one of said stub center sill end portions.

4,331,084

FUEL FEED TECHNIQUE FOR AUGER COMBUSTOR

Robert E. Fitch, Kent, Wash., and Robert C. Tyer, Baldwin, Fla., assignors to The Boeing Company, Seattle, Wash.

Filed May 9, 1980, Ser. No. 148,370
Int. Cl.³ F23N *5/18*
U.S. Cl. 110—186 **9 Claims**



1. A starved-air combustor comprising:

a combustion chamber having an inlet end for receiving fuel, said combustion chamber for combusting said fuel to produce hot combustion gases and combustion residue, said combustion chamber also having an outlet end for discharging said combustion residue, and an outlet port for discharging said hot combustion gases;

means in said combustion chamber for conveying said received fuel from said inlet end toward said outlet end, said conveying means comprising a rotatable screw conveyor extending along the length of said chamber, said screw conveyor including a spiral flight defining a plurality of spaces within said combustion chamber, a first of said spaces located adjacent said inlet end of said combustion chamber; and

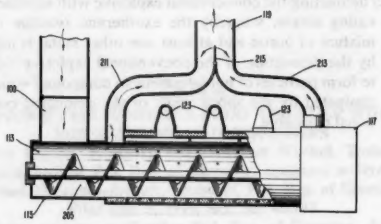
means for selectively and intermittently feeding predetermined weights of said fuel in a batch mode into said inlet end of said combustion chamber, said feeding means including means for receiving and containing said fuel, means for weighing said received and contained fuel, and means for selectively discharging said received and contained fuel responsive to the positioning of said screw conveyor into a predetermined orientation and to the accumulation of a preselected weight of said fuel in said receiving and containing means, said discharging means including a release valve connected to one end of said fuel receiving and containing means to enable in a first valve position the discharging of said fuel from said fuel receptacle into said inlet end of said combustion chamber and to enable in a second valve position the accumulation of said fuel in said fuel receptacle; and a cover valve connected to the other end of said fuel receiving and containing means to enable in a first valve position the hermetic sealing of said receiving and containing means from ambient air and to prevent the accumulation of fuel in said receiving and containing means, and to enable in a second valve position said fuel to pass into said receiving and containing means.

4,331,085

EXIT GAS CONTROL FOR FLAME STABILIZATION AND PERFORMANCE TUNING OF STARVED-AIR AUGER COMBUSTOR

Robert C. Tyer, Rte. 24, Box 600, Baldwin, Fla. 32234; Robert E. Fitch, 13262 SE. 261 St., Kent, Wash. 98031, and Gordon H. Tucker, 1708 Franklin St., Enumclaw, Wash. 98022

Filed May 9, 1980, Ser. No. 148,497
Int. Cl.³ F23J *15/00*
U.S. Cl. 110—203 **2 Claims**



1. A starved-air combustor comprising:

a combustion chamber having an inlet end for receiving fuel, said combustion chamber for combusting said received fuel to produce hot, combustion gases and combustion residue, said combustion chamber including an outlet end for discharging said combustion residues;

means for conveying said fuel through said combustion chamber from said inlet end towards said outlet end;

an exhaust gas collector;

a first conduit communicating with said combustion chamber proximate said inlet end of said combustion chamber and with said exhaust gas collector for exhausting said hot, combustion gases from said combustion chamber to said exhaust gas collector;

a second conduit communicating with said combustion chamber proximate said outlet end of said combustion chamber and with said exhaust gas collector for exhausting said hot, combustion gases from said combustion chamber to said exhaust gas collector; and

means for controlling the exhausting of said combustion gases from said combustion chamber to exhaust selectively said evolved gases entirely through said second means or proportionately through said first means and said second means, said controlling means comprising a rotatable damper in said exhaust gas collector positionable in a first orientation to completely block the exhaustion of said combustion gases through said first conduit and to permit the complete exhaustion of said combustion gases through said second conduit, a second orientation to partially block the exhaustion of said combustion gases through said second conduit and to permit the partial exhaustion of said combustion gases through said first conduit, and a plurality of third orientations intermediate said first orientation and said second orientation, each of said third orientations for permitting the proportional

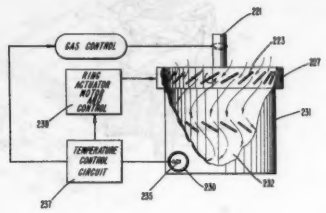
exhaustion of said combustion gases from said combustion chamber through said first conduit and said second conduit.

4,331,086

HOT GAS RECYCLE FOR STARVED-AIR COMBUSTOR

Robert E. Fitch, Kent, and Gordon H. Tucker, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 9, 1980, Ser. No. 148,362
Int. Cl.[3] F23B 5/02; F23C 9/00
U.S. Cl. 110—204 2 Claims



1. A starved-air combustor comprising:

a combustion chamber having an inlet end for receiving fuel, said combustion chamber for combusting said received fuel to produce hot combustion gases and combustion residue, said combustion chamber further including an outlet end for discharging said combustion gases;

means in said combustion chamber for conveying received fuel from said inlet end toward said outlet end;

a plenum adjacent to said combustion chamber and communicating with said chamber through at least one aperture located beneath said fuel in said combustion chamber;

means for receiving said hot combustion gases from said combustion chamber and for further combusting any combustible material entrained in said combustion gases to produce a hot non-combustible gas;

means for selectively mixing a portion of said non-combustible gas with selected amounts of air to heat said air and for supplying said mixture to said plenum for injection into said combustion chamber through said aperture to heat and to dry said fuel in said chamber, said mixing means comprising:

a mixing chamber having an inlet end for receiving said hot non-combustible gas and an outlet end;

a ring actuator at said inlet end of said mixing chamber, said ring actuator including a plurality of rotatable vanes positionable to permit selected amounts of air into said chamber and to impart a swirling motion to said admitted air;

means for supplying said hot non-combustible gases to the center of said ring actuator to enable the mixing of said gases with said swirling air; and

a plurality of fixed vanes in said mixing chamber downstream of said ring actuator, said fixed vanes for imparting a swirling motion to said mixture of gases and said swirling air to prevent the formation of hot spots along the surface of said mixing chamber; and

a conduit for applying said mixture of air and non-combustible gases to said plenum; and

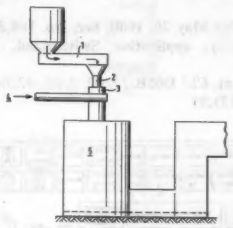
means for sensing the temperature of said swirling mixture of air and non-combustible gases to be supplied to said plenum and for controlling the amount of air mixed with said non-combustible gas to maintain a preselected temperature range for said mixture, said sensing means for controlling said ring actuator to rotate said rotatable vanes in a closing direction to decrease the amount of air admitted into said chamber responsive to the sensed temperature of said mixture of air and non-combustible gases being below said preselected temperature range and to rotate said rotatable vanes in an opening direction responsive to said sensed temperature of said mixture of air and non-combustible gases being above said preselected temperature range.

4,331,087

METHOD AND APPARATUS FOR FORMING A TURBULENT SUSPENSION SPRAY FROM A PULVEROUS MATERIAL AND REACTION GAS

Kalevi J. Kunttu, Espoo; Launo L. Lilja, and Valto J. Mäkitalo, both of Pori, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Dec. 20, 1979, Ser. No. 105,556
Claims priority, application Finland, Dec. 21, 1978, 783961
Int. Cl.[3] F23D 1/02
U.S. Cl. 110—264 7 Claims



1. A method of forming a turbulent suspension from a pulverous material and a reaction gas by causing the pulverous material to flow downwards as a substantially vertical annular flow into a reaction chamber and by directing the reaction gas downwards inside the annular flow of pulverous material, comprising causing the pulverous material to fall freely in the reaction chamber under the influence of gravity in an annular flow bringing the reaction gas into a high-force rotary motion and throttling the rotating flow of the reaction gas before the gas contacts the pulverous material, and discharging the gas into the reaction chamber at a flare angle so that in the reaction chamber the gas meets the surrounding annular flow of the pulverous material to form a suspension from the gas and the pulverous material serves to protect the walls of the reaction chamber from the direct effects of the reaction gas.

4,331,088

MANAGEMENT OF CHEMICAL TOXIC WASTES

Louis Gold, 2745 29th St., NW., Washington, D.C. 20008

Filed Apr. 19, 1979, Ser. No. 30,991
Int. Cl.[3] F23G 7/00
U.S. Cl. 110—346 3 Claims

1. A method of chemical toxic wastes management by thermal decomposition using a coal reactor as the heat source and slag producer for purging and encapsulation comprising the steps:

(a) Feeding said toxic wastes via a seal at the top of the coal reactor together with adjusted input of coal and limestone to effect direct thermal decomposition and purging of the decomposition products and wherein said wastes, coal, and limestone form a stockline located above a combustion zone,

(b) controlling the flow of the resultant gaseous effluent by establishing a reflux mode forcing the said effluent to exit the coal reactor via an upcomer conduit located intermediate the stockline and the combustion zone to maintain complete removal of toxic pollutants,

(c) Encapsulating the residual solid toxic pollutants with the highly reactive hot slag, the encapsulated product then removed at the bottom of the coal reactor in sufficiently large batches to allow gradual cooling in a crucible de-

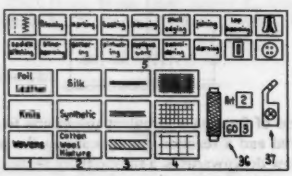
signed to slow solidification conducive for yielding sound castings.

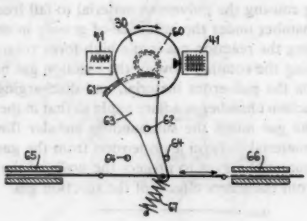
4,331,089

DEVICE FOR SIMPLIFICATION OF SEWING MACHINE ADJUSTMENTS AND SET-UP

Hans Widmer, Magglingen, Switzerland, assignor to Fritz Gegauf AG Bernina-Naehmaschinenfabrik, Steckborn, Switzerland

Filed May 29, 1980, Ser. No. 154,337
Claims priority, application Switzerland, Jun. 6, 1979, 5252/79
Int. Cl.³ D05B *19/00, 3/02, 47/04*
U.S. Cl. 112—121.11 12 Claims





1. A device for simplifying adjustment and set-up of a sewing machine having drive and control systems, machine parts involved in sewing operations, adjusting devices coupling the drive and control systems to the machine parts, and manually operated adjustment elements coupled to the adjusting devices, comprising:

an input unit having a plurality of means for manually producing data fully characterizing a material type and any type of sewing operation desired to be performed;

memory means accessed by said data produced by said input unit and in which is stored all optimum sewing machine adjustment values including ranges for performing any selected sewing operation on different materials in addition to corresponding accessory data characterizing foot, needle and thread settings;

optical display means located at least to some extent on the sewing machine and connected to said memory means for displaying said corresponding accessory data; and

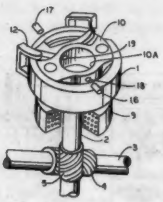
adjustment mechanisms coupled to the adjusting devices and controlled by said memory means for adjusting at least some of the machine parts in accordance with said adjustment values and ranges, whereby adjustment and set-up of the sewing machine can be automatically performed.

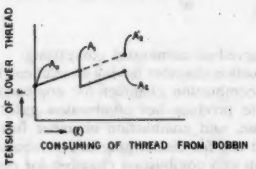
4,331,090

BOBBIN THREAD TENSIONING DEVICE FOR A SEWING MACHINE

Susumu Hanyu; Yoshinobu Tonomura; Hideaki Takenoya, and Masanori Hara, all of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,577
Claims priority, application Japan, May 23, 1979, 54/62584
Int. Cl.³ D05B *47/04*
U.S. Cl. 112—229 6 Claims





1. A bobbin thread tensioning device for a sewing machine having a lower shaft, comprising a cup-shaped loop taker; a bobbin carrier accommodated within said loop taker and formed with a central bore; a magnetic bobbin for carrying a lower thread, said bobbin being received within said central bore and adapted to be rotated as the lower thread is drawn out; a magnetic central shaft rigidly secured to said loop taker and operatively connected to the lower shaft of the sewing machine for rotation therewith, said bobbin carrier being provided with a magnetic plate positioned in the vicinity with said magnetic shaft; detecting means for detecting the amount of the lower thread remaining on the bobbin during the operation of the sewing machine; and bobbin thread tension adjusting means including an energizing coil surrounding said magnetic shaft so that said magnetic bobbin, said magnetic plate and said magnetic shaft form a magnetic path passing through the center of said energizing coil, and a control circuit electrically connected to said energizing coil, said control circuit being operatively connected to said detecting means for adjusting the amount of the electric current flowing through said energizing coil and thus changing the electromagnetic force in said magnetic path and affecting the friction force between said magnetic plate and said bobbin thereby tightening the lower thread in response to the predetermined amount of the remaining lower thread detected by said detecting means.

4,331,091

THREE-DIMENSIONAL THICK FABRICS AND METHOD AND APPARATUS FOR MAKING SAME

Leon Parker, Burbank, and Arthur R. Campman, Los Angeles, both of Calif., assignors to Hitco, Irvine, Calif.

Filed Oct. 22, 1979, Ser. No. 86,655
Int. Cl.³ D05B *97/00, 1/10*; D05C *15/00*
U.S. Cl. 112—262.1 10 Claims

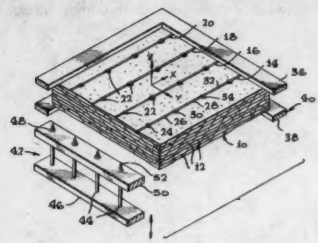
1. A method of making a three-dimensional thick fabric comprising the steps of:

forming a laminate from individual fabric plies, the thicknesses of the fabric plies combining to define a thickness of the laminate between opposite broad surfaces of the laminate;

forming a plurality of holes through the thickness of the laminate, the holes extending in a pattern across substantially the entire opposite broad surfaces of the laminate; and

passing a needle through each of at least a substantial number of the holes in the laminate to secure a yarn on the opposite side of the laminate and pull the yarn back through the hole with the needle to form a loop in the yarn, the loops from adjacent holes being interconnected.

9. A method of making a three-dimensional thick fabric of curved, hollow configuration comprising the steps of:



providing a form of generally circular configuration;

winding a length of fabric a selected number of times around the form to form a laminate, the laminate having opposite inner and outer broad surfaces;

forming holes in the laminate across at least substantial portions of the inner and outer surfaces; and

pulling loops of a plurality of yarns through the holes so that the loops interlock with loops pulled through adjacent holes.

4,331,092

PATTERN CAM POSITIONING MEANS IN STOPPING DEVICE FOR SEWING MACHINES

Michio Hisatake, Hino; Noboru Kasuga, and Yasuro Sano, both of Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

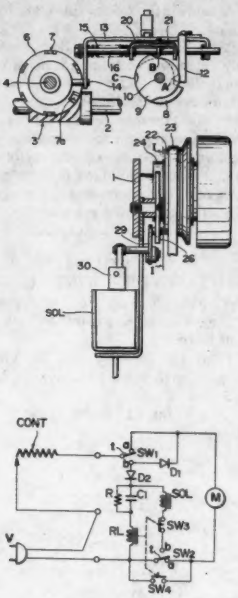
Filed Jul. 31, 1980, Ser. No. 175,203

Claims priority, application Japan, Aug. 2, 1979, 54-106126[U]; Nov. 5, 1979, 54-152422[U]

Int. Cl.³ D05B *3/02, 69/22*

U.S. Cl. 112—275 **8 Claims**

1. A cycle stitching device for a sewing machine having an upper drive shaft rotated to vertically reciprocate a needle bar with a needle, a group of pattern cams rotated at a predetermined speed by the upper drive shaft, follower means selectively engaging the pattern cams and operatively connected to the needle bar to control the lateral swinging movement of the latter, a pulley mounted on one end of the upper drive shaft, a machine drive motor for driving the pulley, an operator-controlled switch operated to electrically drive the machine motor, a clutch normally connecting the upper drive shaft to the pulley, and stopping means including a solenoid electrically energized to stop the upper drive shaft at a predetermined angular position thereof, said solenoid simultaneously operating the clutch to disconnect the upper drive shaft from the pulley, said cycle stitching device comprising control means rotated at a predetermined speed by the upper drive shaft; setting means manually operated and displaced in a first direction relative to the control means and cooperating with the control means and displaced in the second direction at a predetermined angular position of the control means; first switch means electrically connected to the operator-controlled switch and operated by the displacement of the setting means in the first direction to start the machine drive motor at a predetermined speed; and second switch means normally closed to energize the machine drive motor together with the first switch means, and opened by the displacement of the setting



means in the second direction to deenergize the machine drive motor and then to energize the solenoid.

4,331,093

COMPOSITE WIND SURFBOARD

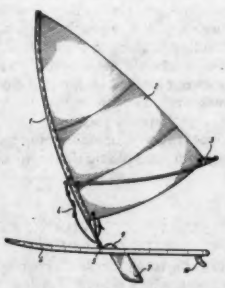
Jens T. T. Moller, Orum, Denmark, assignor to Ten Cate Sports B.V., Almelo, Netherlands

Filed Sep. 20, 1979, Ser. No. 76,989

Claims priority, application Denmark, Sep. 20, 1978, 4154/78; Nov. 30, 1978, 5369/78

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—39 **11 Claims**



1. A composite wind surfboard comprised of at least two single surfboards, each having a keel box for receiving a retractable keel,

said surfboards being linked together in tandem such that a rear end of a first surfboard is substantially juxtaposed end-to-end to a forward end of a second surfboard,

said surfboards being tandemly linked together by means of

a substantially rigid elongated linking member disposed along a substantial length of the bottom of said tandemly arranged surfboards and across a tandemly juxtaposed portion of said surfboards in substantially a common horizontal plane,

said elongated linking member being coupled by a first vertically extending coupling means at one end thereof to said first surfboard and by a second vertically extending coupling means at its other end to said second surfboard relative to said common horizontal plane,

each of said coupling means extending into each of the corresponding keel boxes of said surfboards,

and wherein said elongated linking member has in substantially the middle thereof fastening means for coupling said surfboards in a tandem-juxtaposed relationship.

4,331,094

MAST BASE FOR A WIND SURF-BOARD

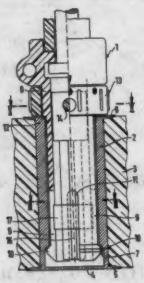
Ernst Drexler, Munich, Fed. Rep. of Germany, assignor to AKUTEC Angewandte Kunststoff-technik GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,301

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917585

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—90 **8 Claims**



1. In a mast base for a wind surfboard having a mast cardanically connected thereto; said wind surfboard having a sleeve in the surfer board body, said mast base being releasably latched in said sleeve and having spring-elastically adjustable latching means engageable in conforming recesses in said sleeve of the wind surfboard, the improvement comprising: spring-elastic latching tongues insertable into said sleeve, axial slots separating said latching tongues from each other, said latching means including protruding latching detents formed at the lower ends of said tongues extending in the inserting direction on said mast base; clamping means located within said mast base behind said latching tongues; and handgrip means for varying the spring elasticity of said latching tongues from externally of said mast base through manipulation of said clamping means upon said mast base being inserted into said sleeve in said wind surfboard.

4,331,095

ARRANGEMENT FOR DIVIDING A SHIP'S FREE LIQUID SURFACE

Gunnar Margard, Karlstad, Sweden, assignor to Karlstads Handels - och Konsult AB, Karlstad, Sweden

Filed Apr. 12, 1979, Ser. No. 29,437

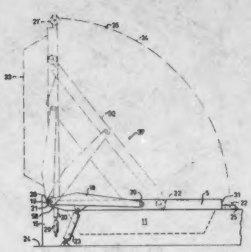
Claims priority, application Sweden, Apr. 28, 1978, 7804941

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—201 R **5 Claims**

1. An arrangement for dividing the top free liquid surface of a liquid cargo shipped in general cargo and bulk cargo ships, such ships having a hull with a horizontal hatch above the free surface of the liquid cargo, the arrangement comprising:

a cover having two sides and adapted to be arranged above the hatch, a unit including a plurality of sheets on one side of the cover and projecting therefrom, said sheets having opposed upper and lower edges, the sheets forming a plurality of shieldings and a plurality of compartments located side by side, the unit being dimensioned to fit into at least a portion of the hatch, the cover being adapted to be positioned over the hatch with the sheets vertically in the hatch, the lower edges of the sheets being located below the free liquid surface of the liquid cargo and the upper edges of the sheets being located at or above the free liquid surface of the liquid cargo, the cover being turnable between a close position in which the one side is



adjacent the hatch with the sheets vertically in the hatch and an open position in which the other side of the cover is adjacent the hatch, and turning means for turning the unit between the close and open positions, the turning means including arm means, the arm means having opposed ends respectively pivotally connected to the cover and the hull, the arm means being able to both lift the cover from the hatch and lower the cover onto the hatch, and means for moving the cover through a substantially vertical position to a horizontal position turned through 180 degrees relative to the starting position of the cover during the lifting of the cover from the hatch and the subsequent lowering of the cover onto the hatch.

4,331,096

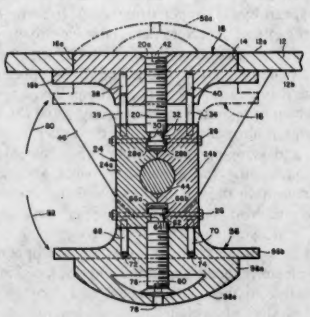
DIVER OPERATED RETRACTABLE PAD EYE

Richard E. Lovejoy, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1980, Ser. No. 207,853

Int. Cl.³ B63B *21/04*

U.S. Cl. 114—218 **15 Claims**



1. A retractable pad-eye device in combination with a plate forming part of a hull or housing and having inner and outer surfaces and an opening therethrough, said device comprising:

pivot-block means;

trunnion means supporting said pivot-block means for rotation about an axis parallel to and spaced from said inner surface;

a closure member;

a pad-eye member having a bail;

first and second means operatively connecting said closure member and said pad-eye member to said pivot-block means for rotation therewith about said axis to selectively bring said closure member and said pad-eye member alternatively into registration with said opening;

said first means being operable, when said closure member is in registration with said opening, to move said closure member into and out of engagement with said plate and closing relation to said opening; and

said second means being operable, when said pad-eye member is in registration with said opening, to move said pad-eye member into and out of engagement with said plate and closing relation to said opening with said bail exposed for attachment.

4,331,097

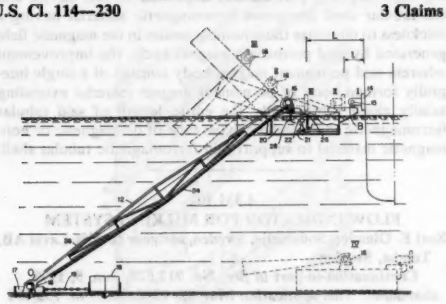
FLOATING DOLPHIN

Sidney I. Belinsky, 40 Waterside Plaza, Apt. 29M, New York, N.Y. 10010

Filed Jun. 2, 1978, Ser. No. 902,508

Int. Cl.³ B63B *21/00*

U.S. Cl. 114—230 **3 Claims**



1. A floating breasting dolphin of a berth, capable of absorbing impact from a berthing ship by transferring the ship's kinetic energy into potential energy through lifting of a floating part of the dolphin from the water, comprising a floating pontoon, a fender supported at the front end of said pontoon and adapted to engage the berthing ship, a fender's universal joint connecting the back of said fender with the front end of said floating pontoon, a pair of levers normally inclined to the sea bottom and transversely oriented to the breasting line of the berth connected at their lower ends to separate underwater foundation by means of universal joints and at their upper ends by universal joints, respectively, to the sides of said pontoon at points located between the front and rear ends and above the upper deck of said pontoon thereof at a substantial distance from the universal joint of said fender and substantially above the pontoon's center of gravity whereby the distance between said points and said fender's universal joint constitute the radius of rotation for said pontoon around said fender's universal joint as the ship moves the fender which is staying fixedly in place on the ship's side by force of friction, a longitudinal lever also normally inclined to the sea bottom but parallel to the front end of said pontoon and the breasting line of the berth being connected at its lower end to separate underwater foundation by a universal joint and at its upper end by a universal joint to one side of said pontoon proximate the universal joint of said fender.

4,331,098

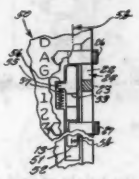
TENNIS SCORE KEEPER

Aldo Rubano, c/o George Spector, 3615 Woolworth Building, 233 Broadway, New York, N.Y. 10007

Filed Sep. 30, 1976, Ser. No. 728,209

Int. Cl.³ A63F *1/18*; A63B *49/00*

U.S. Cl. 116—225 **1 Claim**



1. A tennis score keeper comprising an elongated frame having front and back sides with an internal cavity therebetween wherein the front side has enscribed thereon indicia related to points and games scored in a tennis match, said indicia being in alignment along the longitudinal axis of said frame in combination with two transversely spaced pairs of opposing similar indicators s slidably mounted on said frame with the indicia centrally therebetween, wherein each indicator includes a resilient leg and a spaced opposing pointer directed transversely towards the indicia, including a pair of guide slots communicating with said cavity transversely spaced on each side of said indicia and extending generally longitudinally of said indicia, each indicator mounted slidably in each slot with said leg extending into said cavity said frame and indicators including coacting abutting portions for affixing each indicator at spaced selected locations wherein each of said pointers are retained in transverse alignment with a selected indicia, said abutting portions including a frame surface having regularly spaced notches for engaging each said indicators leg and pointer corresponding to said selected locations in combination with further means slidably mounted on said frame between each pair of indicators whereby longitudinal movement of one of said indicators from a selected indicia towards the other of said indicators will cause a predetermined longitudinal movement of the other of said indicators thereby automatically adjusting the game score to correspond with the point scoring.

4,331,099

METERING DEVICE FOR LACQUER

Dieter Töpfer, Heidenrod, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 17, 1980, Ser. No. 188,040

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938521

Int. Cl.³ B05C *3/18*

U.S. Cl. 118—413 **7 Claims**

1. A metering device for lacquer, suitable for incorporation into a developing apparatus for printing plates, comprising:

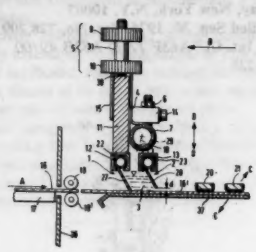
a first doctor blade positioned above a printing plate passing through the apparatus;

means for adjusting the height of said first doctor blade;

a second doctor blade positioned parallel to said first doctor blade to define therebetween a reservoir space;

means for supplying lacquer to the reservoir space, said lacquer supplying means including a spray tube arranged above the reservoir space, a metering pump, a hose connection between said spray tube and said metering pump,

and means for controlling the running time of said metering pump; and



means for adjusting the height of said second doctor blade independently of the height of said first doctor blade.

4,331,100

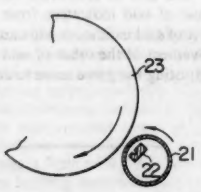
MAGNETIC BRUSH DEVELOPMENT APPARATUS

Manabu Mochizuki, Yokohama; Masahide Harada, Tokyo; Mitsuo Tanaka, Machida; Kouji Suzuki, Yokohama; Kazuaki Tagawa, Tokyo, and Kazuo Kobayashi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 965, Jan. 4, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,051

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—657 8 Claims



1. In a magnetic brush development apparatus for use with copying or recording devices having a latent image-bearing member and a non-magnetic support for holding a magnetic brush of developer and wherein the support and the image-bearing member are movable relative to each other for brushing the developer over a latent image, the improvement comprising magnetic means disposed adjacent said non-magnetic support and acting on the magnetic brush thereon and producing a magnetic field with a plurality of peaks of intensity acting on the magnetic brush so as to form the brush with peaks of developer along the width of the non-magnetic support, which brush contact the latent image-bearing member, said magnetic means comprises a single one-piece magnet having one pole adjacent said support, said one pole having a brush forming surface at the top thereof facing said support which includes an inwardly recessed portion relative to said support, flanked by flanking portions of said surface extending outwardly toward said support relative to said recess portion, said magnet having another pole spaced away from said support.

4,331,101

ELECTROGRAPHIC COPYING DEVICE WITH MAGNETIC CYLINDER

Werner Müller, Bonn-Bad Godesburg, and Erich A. Steingroever, Bonn, both of Fed. Rep. of Germany, assignors to Magnetfabrik Bonn GmbH, Bonn am Rhein, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,552

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921229

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—658 13 Claims

1. In electrographic copiers of the type wherein a toner-carrying device comprises a tubular shell of ferromagnetic material which cooperates with an assembly including a permanent magnet body to form images by means of toner particles having high magnetic permeability deposited on said device and the tubular shell comprises ferromagnetic material having a thickness to minimize the inhomogeneities in the magnetic field generated by said permanent magnet body, the improvement wherein said permanent magnet body consists of a single integrally formed body of permanent magnet material extending axially along substantially the entire length of said tubular ferromagnetic shell; and a coaxial tube of diamagnetic or non-magnetic material to support said ferromagnetic tubular shell.

4,331,102

FLOW INDICATOR FOR MILKING SYSTEM

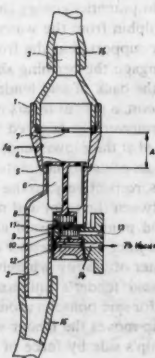
Karl E. Olander, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Continuation-in-part of Ser. No. 912,529, Jun. 5, 1978, abandoned. This application May 22, 1980, Ser. No. 152,434

Claims priority, application Sweden, Jun. 10, 1977, 7706767

Int. Cl.³ A01J *5/00, 5/04*

U.S. Cl. 119—14.08 4 Claims



1. In a milking system having a first duct for conveying milk from a milk claw and a second duct adapted to be maintained under vacuum for conveying milk to a transport conduit, a milk flow indicator comprising a housing having an inlet to

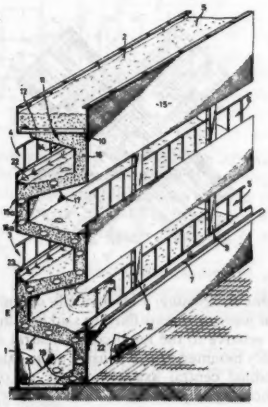
which said first duct leads and also having an outlet from which said second duct leads, the housing containing a valve seat between said inlet and said outlet, and valve means in the housing coacting with said seat and having a density higher than that of the milk, said vacuum being operable to create a flow of milk through said inlet and raise the valve means to a first, open position, said valve means being movable downwardly upon cessation of said milk flow to a second, closed position under the influence of gravity, the sinking velocity and the distance of said downward movement of the valve means being selected to provide a predetermined time delay in said movement of the valve means to said second position, the housing having below said outlet an inner fructo-conical wall surrounding the valve means along at least a portion of its distance of movement, said inner wall having a diameter which increases gradually upwardly to provide a decreasing through-flow area for the milk as the valve means moves downwardly.

4,331,103

NEST INSTALLATION FOR POULTRY FARMS

Josef Kühlmann, Konigstr. 41, D - 4401 Laer, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,947
Int. Cl.³ A01K *31/16*
U.S. Cl. 119—48 **8 Claims**



1. A nest installation for poultry comprising:

at least two interconnected nest stories constructed and arranged in a stacked relationship to each other including a topmost and a bottommost story, each of said stories having a floor, a ceiling, and at least one closed side, said side having an inner wall and an outer wall;

at least two guide walls, each of said guide walls defining a ceiling and an inner wall of a first nest story, and a floor and an outer wall of a second nest story, said second nest story being positioned above said first nest story;

a layer of chaff extending from said topmost nest story to said bottommost nest story along and between said inner and outer walls of each story therebetween and extending along said floor of each of said nest stories;

a supply trough positioned proximate said topmost nest story, said supply trough containing an amount of chaff sufficient to substantially fill said layer extending through said nest stories and including first conveying means for moving said chaff through said trough; and

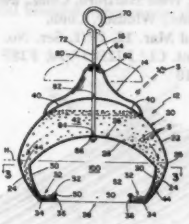
an egg collecting trough positioned proximate said floor of said bottommost nest story, said collecting trough including second means for conveying eggs from said nest installation.

4,331,104

BIRDFEEDER

Stephen G. Clarke, Coventry, Conn., assignor to Clarke Products Co., Inc., West Hartford, Conn.

Filed Oct. 29, 1980, Ser. No. 201,795
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—52 R **33 Claims**



29. A birdfeeder comprising:

a body extending along a vertical axis, said body having an outer shell,

wall means inside said shell,

said shell and said wall means defining a reservoir and a restricted chute therebetween, and

a feed tray inside said shell,

said chute communicating between said reservoir and said tray to provide gravity feed of seed therebetween, and

a fly-in access opening in said shell, said access opening communicating between the exterior of said shell and said tray and being large enough to allow birds to fly into said shell,

the extent of said shell between said opening and the upper end of said body being large enough to prevent squirrels resting on said end from reaching into said opening,

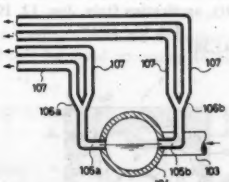
wherein said shell is convexly curved and has upper and lower wall portions, said wall portions intersecting at a plane of maximum diameter.

4,331,105

FORCED-FLOW ONCE-THROUGH BOILER FOR VARIABLE SUPERCRITICAL PRESSURE OPERATION

Tomozuchi Kawamura; Hisao Haneda, and Mamoru Araoka, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Sep. 8, 1980, Ser. No. 184,771
Claims priority, application Japan, Nov. 21, 1979, 54-151179
Int. Cl.³ F22B *29/12*
U.S. Cl. 122—406 S **1 Claim**



1. A forced-flow once-through boiler for variable supercritical pressure operation comprising burners, water-wall tubes constituting the surrounding walls of a furnace, said water-wall tubes comprising banks of vertical generating tubes for simultaneous upward flow, a water separator, and a convection-heating type evaporator mounted between the outlets of said water-wall tubes and said water separator, wherein said convection-heating type evaporator comprises a manifold connected to an inlet connecting tube, an inlet headed connected

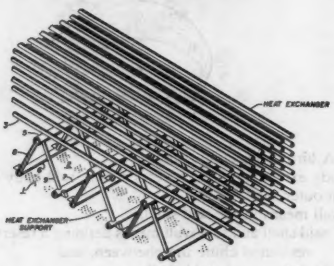
to said manifold with a plurality of horizontal distributing tubes, and a plurality of evaporator tubes communicated with said inlet header through bifurcated tubes.

4,331,106

HEAT EXCHANGER SUPPORT APPARATUS IN A FLUIDIZED BED

Carl W. Lawton, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 12, 1981, Ser. No. 242,958
Int. Cl.³ F22B *37/24;* F28F *9/00*
U.S. Cl. 122—510 **2 Claims**



1. A support structure for a heat exchanger within the upper portion of a combusting fluidized bed wherein the heat exchanger comprises banks of U-tubes extending horizontally from one side of the combusting bed, including;

a series of tubular frameworks extending beneath the banks of heat exchanger tubes transverse the lengths of the tubes, and each framework having;

a support tube extending transverse the length of the heat exchanger tubes and bearing on the underside of the banks,

a pair of tubes extended parallel the support tube and engaging the support structure of the combusting bed,

and a plurality of connecting tubes between the support tube and the lower pair of tubes to form a framework of cross-sectional A-frame configuration;

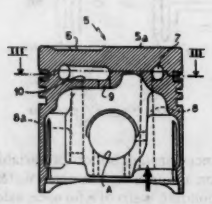
and a supply of water connected to the lower pair of tubes of the framework to flow the water to and from the support tube through the plurality of connecting tubes.

4,331,107

COOLING OF DIESEL ENGINE PISTONS

Ludovico Bruni, Turin, Italy, assignor to Associated Engineering Italy S.p.A., Turin, Italy

Filed Jun. 10, 1980, Ser. No. 158,186
Claims priority, application Italy, Jun. 12, 1979, 68258 A/79
Int. Cl.³ F01P *3/10*
U.S. Cl. 123—41.35 **1 Claim**



1. A piston for a diesel engine, the piston having a one-piece head portion with an upper surface and an annular periphery,

a combustion chamber formed in a part of the upper surface of the piston head, the combustion chamber being offset from the center of the piston head upper surface,

an annular conduit within a zone of the piston head portion,

an inlet opening through which cooling oil is introduced into the annular conduit,

a discharge opening for cooling oil spaced radially inwardly of the annular conduit, and

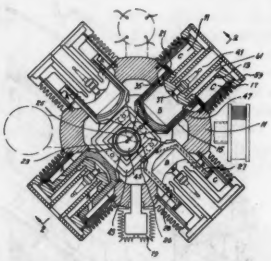
a branch conduit extending radially from the annular conduit directly to the discharge opening, the cross-sectional flow area of the branch conduit being substantially the same as that of the annular conduit, and the branch conduit being located directly below the combustion chamber with its length substantially in registry with the combustion chamber, whereby cooling oil flowing through the branch conduit serves to cool the combustion chamber, the cooling oil flowing through the annular conduit serves to cool an upper area of said annular periphery of the piston.

4,331,108

RADIAL ENGINE

Brian S. Collins, Unit 35, 45 Leonard St., Victoria Park, Western Australia, Australia

Continuation-in-part of Ser. No. 852,356, Nov. 17, 1977, abandoned. This application Jan. 14, 1980, Ser. No. 111,801
Claims priority, application Australia, Nov. 18, 1976, 8181/76
Int. Cl.³ F02B *59/00*
U.S. Cl. 123—50 R **9 Claims**



1. An engine comprising; a substantially cylindrical housing, a plurality of piston elements fixed to said housing and extending radially relative to the longitudinal central axis thereof, a rotor rotatably mounted in said housing on an axis parallel with said longitudinal central axis to execute an orbital motion within the housing, a plurality of tubular elements each slidably mounted over a respective of said fixed piston elements, said tubular elements being closed at their inner ends and having their inner ends in slidable driving engagement with said rotor for causing reciprocation of the tubular elements over the piston elements upon rotation of the rotor whereby the volume of the space defined by the interior of each of said tubular elements and the respective of said piston elements varying with the rotation of said rotor, a cylindrical wall of housing surrounding each of said piston elements being spaced therefrom to define an annular slot, a flange portion formed on each of said tubular elements sealingly and slidably engaged in said slot to form a pumping space between said flange portion of the tubular elements and the sides of the slot of variable volume with the reciprocation of said tubular element, an air inlet port formed in the housing in communication with each of said slots, a port extending through each of tubular elements from said slot into the combustion space defined between the interior of the respective tubular element and the respective piston to pump air into that space, said rotor having a rotor lubricant duct therein opening into the faces of the rotor adjacent the inner ends of the respective of said tubular elements, said tubular elements each having lubricant supply ducts formed therein and opening at one end thereof at the inner end such that they periodically communicate with said rotor lubricant duct on orbital rotation of said rotor, the other ends of

said lubricant supply ducts opening into opposite faces of the respective flange portion of said tubular element which are in slidable engagement in the slot, said rotor duct being connected to a lubricant supply associated with the engines, and a lubricant return passage extending from opposite faces of said flange portion through each of said tubular elements to the interior of said housing for returning lubricant to said lubricant supply.

4,331,109

PREHEATING DEVICE FOR STARTING AN INTERNAL COMBUSTION ENGINE OF THE DIESEL TYPE OR THE LIKE

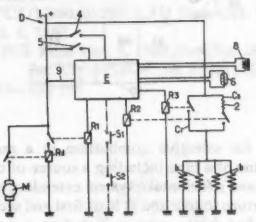
Dominique Arnault, Maintenon Pierres, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of, France

Filed Apr. 9, 1980, Ser. No. 138,680

Claims priority, application France, Apr. 13, 1979, 79 09527

Int. Cl.³ F02P *19/02;* **F02N** *17/00*

U.S. Cl. 123—179 H **23 Claims**



1. A pre-heating device, for starting an internal combustion engine, of the Diesel type or the like, comprising:

a pre-heating plug, mounted in each cylinder of the internal combustion engine, adapted to be supplied by a source of electrical energy to ensure preheating of a combustion chamber;

a rapid pre-heating circuit which ensures the connection of each pre-heating plug to a relatively high electrical voltage, said rapid pre-heating circuit being normally put into operation from the start of pre-heating;

a slow pre-heating circuit adapted to ensure the connection of each pre-heating plug to a lower electrical voltage after a rapid pre-heating period;

a first delay means;

a means sensitive to the temperature of the internal combustion engine which is connected to said first time delay means whereby the rapid pre-heating period depends on a temperature of the internal combustion engine;

a control means which closes an electrical supply circuit of a starter automatically when the rapid pre-heating circuit is cut off, said control means also being able to close the slow pre-heating circuit when the rapid pre-heating circuit is cut off; and

means sensitive to engine speed, adapted to order a stopping of the starter when the internal combustion engine rotates at a sufficient speed.

4,331,110

PRIMING AND STARTING APPARATUS FOR ENGINES

Norman A. Robinet, 404-6505 Huntridge Hill, NE., Calgary, Alberta, Canada (T2K 5E5)

Filed Nov. 9, 1976, Ser. No. 740,085

Int. Cl.³ F02N *3/02*

U.S. Cl. 123—185 A **6 Claims**

1. Engine priming and starting apparatus comprising:

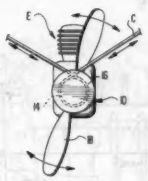
a crankshaft,

an engine drivingly coupled to said crankshaft,

fuel supply means for supplying fuel to said engine,

a power take-off coupled to said crankshaft for taking power from said engine, and

means for priming and starting said engine including a diametrically enlarged cylindrical element drivingly coupled to said crankshaft intermediate said engine and said power take-off, and a cord having opposite free ends with an intermediate portion thereof wrapped at least once about said cylindrical element whereupon alternate pulling on



the free ends of said cord causes rotation of said element and crankshaft in corresponding alternate angular directions to prime said engine solely by drawing fuel into said engine from said fuel supply means and subsequent release of one end of the cord and pulling its opposite end causes unidirectional rotation of said element and said crankshaft to start the engine utilizing fuel from said supply means, said cord being completely removed from said element when its opposite end is pulled to start said engine.

4,331,111

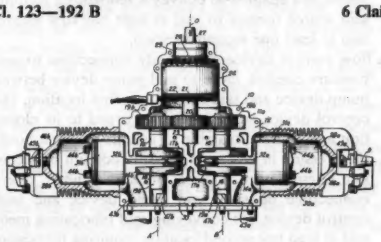
LOW VIBRATION ENGINE

Arthur G. Bennett, 543 Auburn Dr., Auburn, Ala. 36830

Filed Sep. 10, 1979, Ser. No. 73,802

Int. Cl.³ F02B *75/32, 75/18*

U.S. Cl. 123—192 B **6 Claims**



1. An engine having minimized vibration during normal operation and being balanced according to balance criterion expressed as:

$$(m^2be-m_3e)a+2m\epsilon(bc-k^2)=0.$$

where:

a=crank spacing

m=mass of each piston rod

$\epsilon=r/l$ where r is the length of throw of a crank arm and l is the length of the piston rod

m_3=crank mass

e=distance from the center of the crank arm axis to the center of the crank mass m_3

b=distance from the center of mass m_2 to the axis of the crank arm

c=distance from the center of mass of the piston to the center of mass of the piston rod

k=piston rod mass center radius of gyration.

4,331,112

LUBRICATING ARRANGEMENT, ESPECIALLY FOR INTERNAL COMBUSTION ENGINES

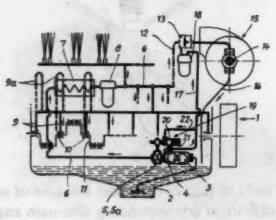
Heinz Pluequet, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,215

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843248

Int. Cl.³ F02B 33/40

U.S. Cl. 123—196 S 8 Claims



1. A lubricating arrangement, especially for internal combustion engines with at least one first location requiring lubrication, and at least one second location requiring lubrication in an auxiliary equipment associated with said engine, said at least one second location being remote from said at least one first location, said arrangement comprising:

a main conduit means for communicating said at least one first location and said at least one second location with a source of lubricating medium, said main conduit means including a main pressure conduit;

a pump device operatively connectible to said main conduit means and adapted to convey a lubricating medium from said source thereof to said at least one first location and said at least one second location;

a flow control device operatively connectible to said main pressure conduit, close to said pump device between said pump device and said at least one first location, said flow control device being inherently urged to its closed position and being actuatable to assume an open position by the pressure in said main pressure conduit between it and said pump device, a direct pressure conduit, operatively connectible between said pump device and said flow control device, for conveying said lubricating medium to said at least one second location requiring lubrication, said main conduit means including a connecting conduit connectible to said main pressure conduit and said direct pressure conduit at a common point for conveying lubricating medium to said at least one second location, and further comprising:

a switch valve device operatively connectible to said connecting conduit at said common point, said switch valve device being adapted to be actuated by lubricating medium pressure in said main pressure conduit such that:

(a) at a predetermined low pressure said switch valve terminates the flow of lubricating medium from said main pressure conduit through said connecting conduit, whereby said direct pressure conduit is adapted to convey said lubricating medium to said at least one second location, and

(b) at a predetermined pressure of said lubricating medium in said connecting conduit said switch valve terminates the flow of lubricating medium through said direct pressure conduit, whereby said connecting conduit is adapted to convey lubricating medium from said main pressure conduit to said at least one second location requiring lubrication.

4,331,113

DEVICE FOR SELECTIVE COMBUSTION IN A MULTI-CYLINDER ENGINE

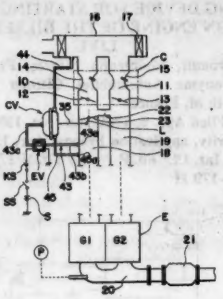
Tomoo Tadokoro; Masami Nakao, and Toshimichi Akagi, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 19, 1980, Ser. No. 122,810

Claims priority, application Japan, Feb. 17, 1979, 54-19184[U]

Int. Cl.³ F02D 17/00

U.S. Cl. 123—198 F 13 Claims



1. A device for selective combustion in a multicylinder automobile engine of a type including a source of combustible air-fuel mixture and a fuel intake system extending between the combustible mixture source and at least first and second engine cylinders, said fuel intake system including a main passage communicating with the combustible mixture source and at least first and second intake passage means communicating respectively at one end with the main passage and at the other end with the respective first and second engine cylinders, said device comprising, in combination:

a shutter valve supported for movement between a closed position, in which the supply of a combustible air-fuel mixture from the combustible mixture source to the first engine cylinder is interrupted, and an opened position in which the supply of the combustible air-fuel mixture from the combustible mixture source is effected to at least the first and second engine cylinders, said shutter valve being positioned inside the first intake passage means;

a diaphragm valve assembly including a valve casing and a diaphragm member dividing the interior of the valve casing into first and second working chambers, said diaphragm member being displaceable between first and second working positions;

means for biasing the diaphragm member to the first working position;

an operating rod having one end connected to the diaphragm member and having the other end operatively coupled to the shutter valve for, when the diaphragm member is displaced from the first working position towards the second working position, moving the shutter valve from the opened position towards the closed position against the biasing means;

an air supply passage means having one end communicating with a source of fresh air and having another end communicating with the first intake passage means at a position downstream of the shutter valve, said air supply passage means having a substantially intermediate portion thereof extending through and communicating with the first working chamber in the diaphragm valve assembly, said diaphragm member, when in the first working position, interrupting the flow of fresh air from the fresh air source to the first intake passage means through the air supply passage means;

a signal transmitting passage means including first and second passage portions communicating respectively with

the second working chamber in the diaphragm valve assembly and the fuel intake system for transmitting the negative pressure inside the fuel intake system to the second working chamber;

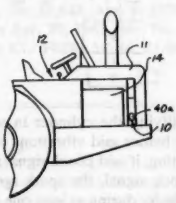
a communication means disposed between the first and second passage portions of the signal transmitting passage means for communicating the first and second passage portions with each other in response to the detection of a particular engine operating condition, whereby the diaphragm member can be displaced to the second working position with the shutter valve being consequently held in the closed position during said particular engine operating condition.

4,331,114

AUXILIARY ENGINE STOPPAGE APPARATUS

David O. Karraker, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01299, § 371 Date Oct. 1, 1980, § 102(e) Date Oct. 1, 1980
PCT Filed Oct. 1, 1980, Ser. No. 261,100
Int. Cl.³ F02B 77/08; F02D 1/00
U.S. Cl. 123—198 DB 7 Claims



1. An auxiliary engine stoppage apparatus (10,10') for an engine governor (18) having an engine stoppage member (19) which is arcuately displaceable between first and second positions which respectively permit engine operation and induce engine shutdown, said auxiliary engine stoppage apparatus (10,10') comprising:

a first stationary frame member (26);

an actuating link (24,24') in sliding engagement with said first frame member (26), said actuating link being displaceable by an external force between first and second positions;

an engagement apparatus (20,20') joined to said engine stoppage member (19) for displacing said engine stoppage member (19) between its first and second positions in response to displacement of said actuating link (24,24') between its first and second positions, respectively, said engagement apparatus (20,20') including an engagement link (22,22') which is pivotable about a stationary primary axis (36) and is displaceable between first and second positions which respectively correspond to engine operation and shutdown;

means for pivotably connecting (28,28') said actuating link (24,24') to said engagement link (22,22') about a secondary axis (38), said pivotal connecting means (28,28') being displaceable with said actuating link (24,24') and said engagement link (22,22'); and

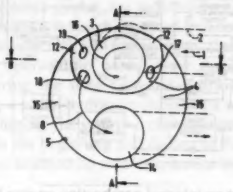
means connecting said actuating link (24,24') and said engagement link (22,22') for biasing (30) said engagement link (22,22') to said operational and shutdown positions with a predetermined, independent force when said actuating link (24,24') occupies first and second positions, respectively.

4,331,115

INTERNAL COMBUSTION ENGINE

Michael G. May, Bel Air, CH-1180 Rolle, Switzerland

Filed Feb. 26, 1980, Ser. No. 124,889
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913763
Int. Cl.³ F02B 19/16
U.S. Cl. 123—263 13 Claims



1. A four-cycle, overhead valve, piston-type, internal combustion engine comprising:

a cylinder;

a cylinder head which is attached to the cylinder and which includes a first portion defining an outlet for discharging combustion gases from the cylinder and a second portion defining an inlet for admitting a charge of air or air-fuel mixture into the cylinder;

a piston moving reciprocatingly within the cylinder, and defining, with the cylinder and the cylinder head, a combustion chamber of varying geometry which is substantially within the extension of a cylindrical surface defined by the piston path;

outlet valve means for opening and closing the outlet, including an outlet valve plate which is substantially disposed within the extension of the cylindrical surface defined by the piston path, the outlet valve plate having one side which is oriented toward a first portion of the piston and is located in the first portion of the cylinder head;

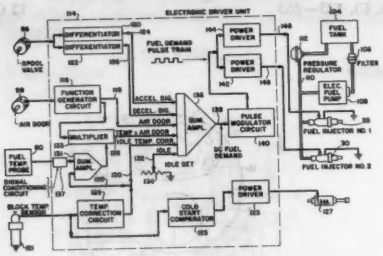
inlet valve means for opening and closing the inlet, including an axis and an inlet valve plate which is substantially disposed within the extension of the cylindrical surface defined by the piston path and is translatable along the valve axis to open or close the inlet, the inlet valve plate being disposed in the second portion of the cylinder head; and

vortex inducing means for inducing a vortex flow within the combustion chamber of a primary component of the incoming charge in a selected direction about an imaginary axis which extends approximately parallel to the inlet valve axis, the vortex inducing means including the cylinder head second portion, said cylinder head second portion being recessed to define, with a piston second portion, a depression within which the main clearance volume of the cylinder is essentially confined, the depression having a wall which is formed in the cylinder head second portion and extends at least partially radially outward from the cylinder inlet and axially toward the piston to a lateral boundary or rim which extends about and defines, an opening of the depression oriented toward the piston second portion, wherein a first portion of the lateral boundary, towards which the inflowing charge flows in the selected direction of the vortex flow, is disposed at a greater distance from the inlet than is an adjacent second portion of the lateral boundary, to thus induce the primary component of the inflowing charge to flow in the selected direction of the vortex flow.

4,331,116
FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Edward L. Simonds, Broken Arrow, Okla. 74012

Filed May 27, 1980, Ser. No. 153,137
Int. Cl.³ F02M *31/00, 15/00, 9/02, 45/12*
U.S. Cl. 123—337 **10 Claims**



1. For use on an internal combustion engine having an intake manifold, and a pressurized source of liquid fuel, a fuel treatment system for concentrating liquid fuel to a combustible air-gas mixture, comprising:

a housing having a cylindrical chamber therein with opposed end walls and having an upper air inlet and lower fuel mixture outlet opening communicating with the cylindrical chamber, an axial opening in one end wall and the other end wall having a tubular fuel nozzle extending therefrom in axial alignment with the cylindrical chamber, the inner end of the fuel nozzle being over the fuel outlet opening, the housing being adapted to attachment to the intake manifold of an engine;

a cylindrical spool of external diameter to be snugly and rotatably received in said housing cylindrical chamber, the spool being hollow to provide tubular cylindrical walls having a centrally extending straight walled bore open to the intake manifold for receiving vacuum therefrom at all times during engine operation, said spool having opposed openings in the cylindrical wall which, in one rotatable position of the spool are in alignment with said inlet and said outlet openings in said housing, the spool having an end wall having an axial boss extending therefrom rotatably received in said housing axial opening whereby the spool may be rotationally orientated in response to fuel demands of the engine to increase and decrease the area of the passageways formed by the spool and body upper openings; and

means to flow fuel through said fuel nozzle.

4,331,117
SYSTEM AND METHOD FOR CONTROLLING ENGINE KNOCK

Irwin Ginsburgh, Morton Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 20, 1979, Ser. No. 105,777
Int. Cl.³ G01L *23/22;* **G01N** *33/22;* **F02P** *11/02;* **G06F** *15/20*
U.S. Cl. 123—425 **22 Claims**

1. A closed loop electronic system for separately controlling the knock condition in an individual cylinder of a spark ignition multicylinder internal combustion engine automatically and continuously during normal engine operation, comprising:

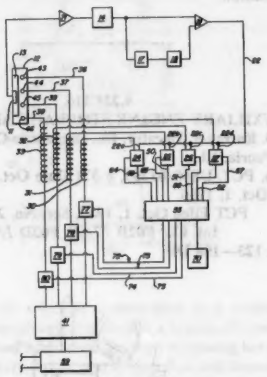
means for detecting during an engine cycle engine vibrations resulting from engine knock and from normal engine operation and for producing a composite signal which is proportional to the intensity of a portion of said detected engine vibrations having frequencies which include at least one frequency of said knock vibrations, said composite signal having an engine knock component and a normal engine operation component;

means for generating a background signal which corresponds to said normal engine operation component of said composite signal;

means for measuring the difference between said composite signal and its corresponding said background signal to obtain said knock component of said composite signal and for generating a knock signal in direct relation to said knock component of said composite signal;

means for generating a reference knock signal of a predetermined level and separate and apart from said background signal;

means for measuring the difference between said knock signal and said reference knock signal;



means for identifying the cylinder in which spark ignition last occurred before said vibrations were detected; and

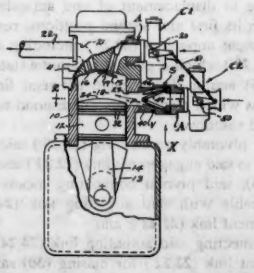
means for adjusting, if said knock signal is different from said reference knock signal, the spark ignition timing in said identified cylinder during at least one engine cycle following said cycle, the adjustment being such as to reduce the difference between said knock signal and said reference knock signal;

each such means performing its function automatically and continuously during normal engine operation.

4,331,118
PRIMARY-SECONDARY INDUCTION INTERNAL COMBUSTION ENGINE

John R. Cullinan, 2323 235th Pl., Torrance, Calif. 90501

Continuation of Ser. No. 925,040, Jul. 17, 1978, abandoned. This application Mar. 11, 1980, Ser. No. 129,393
Int. Cl.³ F02B *15/00*
U.S. Cl. 123—433 **10 Claims**



1. A four stroke Otto Cycle cylinder and piston engine having dual range low and high speed performance, and including; a head closing the upper end of a cylinder and estab-

lishing a chamber in which a piston reciprocates by means of a crank and rod connection between top-and-bottom-dead-center positions, a primary working fluid induction means operating in timed relation to both low and high engine speed and comprising an intake valve in the head and fuel-air admixture means open therethrough during the intake stroke, and exhaust means operating in timed relation to both low and high engine speed and comprising an exhaust valve in the head and a stack open therefrom during the exhaust stroke, and secondary working fluid induction means comprising a port opening into the cylinder chamber and with its upper extremity substantially midway between top-and-bottom-dead-center positions of the top of the piston and with its lower extremity at said bottom-dead-center position thereof, and resonant check valve means biased to remain closed at low engine speed and resonant to open said port intermittently in timed relation to high engine speed for the efficient induction of secondary working fluid through said port from fuel-air admixture means and into the cylinder at a tuned frequency of movement of the top of the piston between said top-and-bottom-dead-center positions thereof when uncovering said port for said induction.

4,331,119

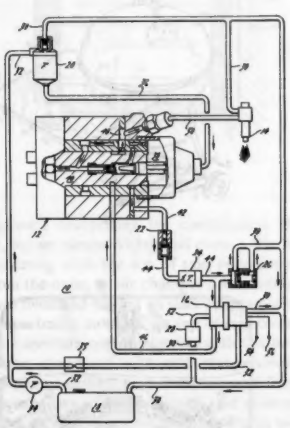
FUEL INJECTION SYSTEM AND CONTROL VALVE FOR MULTI-CYLINDER ENGINES

Alexander Chadwick, South Lyon, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 28,623, Apr. 9, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,606

Int. Cl.³ F02M *59/36, 41/06*

U.S. Cl. 123—458 **1 Claim**



1. In a multi-cylinder fuel injected engine having a fuel injection system including a fuel tank, a fuel pump having an inlet and an outlet, a connection from said tank to said pump inlet through which fuel is conveyed from said tank to said pump inlet, and distribution means connected between the engine and said pump and operable by the engine to selectively distribute to individual engine cylinders in timed relation with engine operation fuel pumped by said fuel pump, the improvement comprising;

an electro-expansive control valve having an inlet, an outlet, a flow passage between said valve inlet and said valve outlet, a valving element disposed in said flow passage operable to control flow though said flow passage, and an electro-expansive actuator for operating said valving element,

means connecting said control valve in hydraulic circuit between said pump and said distributing means with said flow passage in series hydraulic circuit between said pump outlet and said distribution means,

said distribution means comprising an inlet, a plurality of outlets, and means driven by the engine selectively connecting each of said plurality of outlets in series hydraulic circuit with said last-mentioned inlet in timed relation with operation of the engine,

means connecting the inlet of said distribution means with the outlet of said control valve and means connecting each outlet of said distribution means with a corresponding engine cylinder, and

an electric control circuit for selectively energizing said electro-expansive actuator in timed relation with operation of said distribution means such that said valving element is operated to permit flow through said flow passage during the time that said distribution means is completing a series hydraulic circuit to a selected engine cylinder whereby the selective energization of said actuator controls the beginning and ending of fuel injection to the cylinder selected by said distribution means.

4,331,120

DEVICE FOR CONTROLLING EVAPORATIVE EMISSION FROM AN AUTOMOBILE

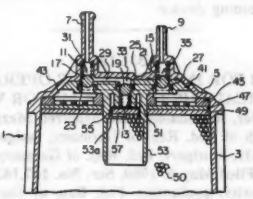
Eizi Hiramatu, Aichi; Yasushi Nakagawa; Hidenori Sato, both of Nagoya, and Shigeru Yoshida, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha; Nippon Denso Kabushiki Kaisha and Aisan Industry Co. Ltd., all of Aichi, Japan

Filed Jul. 16, 1979, Ser. No. 57,643

Claims priority, application Japan, Oct. 31, 1978, 53-133143

Int. Cl.³ F02M *37/02*

U.S. Cl. 123—519 **6 Claims**



1. Device for controlling evaporative emission from an automobile which device comprises:

a casing which accommodates fuel gas absorbing agents therein;

a tank port which is disposed on said casing and which is adapted to communicate with a fuel tank of said automobile, and which has a first check valve therein for permitting flow of fuel gas from said fuel tank into said casing, and;

a purge port which is disposed on said casing and which is adapted to communicate with an internal combustion engine mounted on said automobile, and which has a second check valve therein for permitting flow of fuel gas from said casing to said engine,

wherein each of said check valves of said first and second check valves comprises:

a plastic body,

a thin metal plate insert-molded in said plastic body, said body having a bore therethrough having an axis and a diameter, the metal plate having a hole therethrough having an edge, a center and a diameter, the center of the hole being aligned on the axis of the bore and the diameter of the hole being less than the diameter of the bore, thereby centering the edge within the bore, and

a metal check ball disposed in the bore having a diameter greater than the diameter of the hole and less than the

diameter of the bore, the ball engaging the edge of the hole as a valve seat.

4,331,121

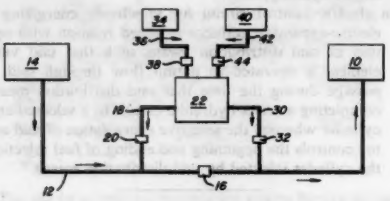
BLENDING SYSTEM FOR UNCONVENTIONAL FUELS AND REGULAR FUEL OR FUELS

Charlie M. Stokes, P.O. Box 1963, Auburn, Ala. 36830

Filed Apr. 17, 1980, Ser. No. 141,186

Int. Cl.³ F02D *3/02, 19/06;* **F02M** *25/08*

U.S. Cl. 123—575 **7 Claims**



1. A system for selectively blending and mixing supplemental fuel or fuels with regular fuel for a fuel consuming device which includes a supply tank for regular fuel with a fuel line communicating directly with the fuel consuming device, a supply tank for supplemental fuel, fuel blender means, means selectively diverting regular fuel through the blender means prior to delivery to the fuel consuming device, and means selectively controlling flow or supplemental fuel to the blender means to enable a blended mixture of regular fuel and supplemental fuel to flow to the fuel consuming device and also enable only regular fuel or only supplemental fuel to flow to the fuel consuming device.

4,331,122

ADAPTER FOR IMPROVING THE OPERATION OF ELECTRICAL CIRCUITS IN A MOTOR VEHICLE

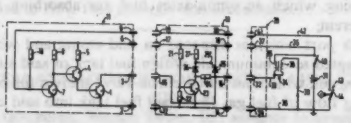
Gerhard Söhner, Remshalden, and Manfred Mezger, Markgroningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,143

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927295

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—595 **2 Claims**



1. In a motor vehicle ignition system comprising a storage battery (31), an ignition transformer (34) serving for accumulation and storage of ignition energy, an ignition switch (40) interposed between said battery and a winding of said transformer for enabling or disabling operation of the ignition system, spark gap means for producing an ignition spark upon interruption of current in said transformer, an interrupter switch for timing the interruption of current in said transformer, a first plug unit (28) having pins connected at least to said transformer, said interrupter switch and a terminal of said battery and having sockets connected to said pins and arranged in a receptacle, and a second plug unit (11) fitting into said first plug unit and having prongs for engagement into the sockets of the receptacle thereof, and also containing switch means (1,4,7) for interrupting current in said transformer (34) in response to opening of said interruptor switch (44) when said second plug unit is directly connected to said first plug unit, the improvement comprising

a third plug unit (13) for interfitting as an adapter in an intermediate position with said first and second plug units having prongs for engagement with the sockets of the receptacle of said first plug unit and a receptacle with sockets for engagement with the prongs of said second plug unit and containing means directly connecting its prongs with its corresponding sockets and means (25) for shunting energy from said ignition transfomer, and thereby preventing generation of an undesired spark, when current in said ignition transformer is interrupted by the opening of said ignition switch while said interrupter switch is closed.

4,331,123

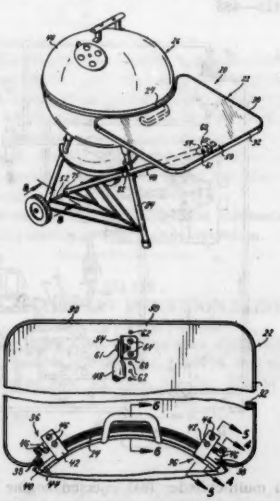
ACCESSORY TABLE FOR PORTABLE KETTLE TYPE BARBECUE GRILL

William G. Alles, 205 Village Creek Ct., Ballwin, Mo. 63011, and Walter J. Alles, 12624 Westport Dr., Creve Coeur, Mo. 63141

Filed Aug. 29, 1980, Ser. No. 182,803

Int. Cl.³ F24C *1/16;* **A47B** *5/00*

U.S. Cl. 126—9 R **13 Claims**



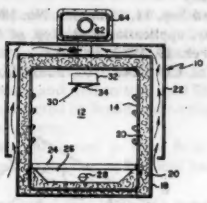
1. A work table for a barbecue grill, the barbecue grill being supported by a pair of wheels rotatably mounted to an axle and a support leg, said grill being thereby repositionable by lifting the side of the grill adjacent said support leg and moving the grill so that it rolls on said wheels, said kit including a table, clip means for attaching one side of said table proximate to said grill cooking surface, said grill having a lip with said clip means adapted to attach to said lip, and a strut sufficiently long to extend from substantially near the outer edge of said table and diagonally beneath the grill to said axle, and means to attach said strut to said axle to thereby provide a support for said table which maintains the same degree of portability for the grill as without said work table kit installed.

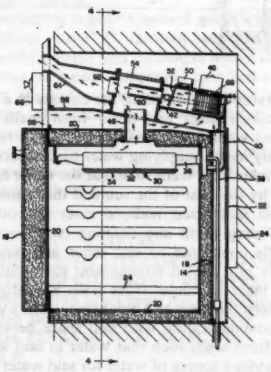
4,331,124

FLUE ASPIRATED OVEN

Harry W. Seidel, Mertztown, and William J. Day, Jr., Allentown, both of Pa., assignors to Raytheon Company, Lexington, Pa.

Filed Jul. 2, 1979, Ser. No. 54,079
Int. Cl.³ A21B 1/00
U.S. Cl. 126—21 A 8 Claims





1. An appliance comprising the combination of an oven having walls, burner means within said oven, a flue having one end communicating with the top of said oven for exhaust of flue gases from the oven, an air chamber surrounding at least a portion of said oven and having an inlet opening at its bottom, a blower compartment mounted on top of said oven and having at least one aperture communicating with said air chamber, exhaust ducting connected with said compartment, blower means for drawing air into said compartment from said air chamber and expelling said air through said exhaust ducting, said flue having its second end terminating within said ducting whereby flue gases from within said oven will be aspirated by and mixed with said air flowing through said ducting, means for connecting said burner with said compartment for supplying combustion air from said compartment to said burner under pressure from said blower means, and detection means for detecting presence of air flow from said blower means.

4,331,125

FIRE STARTER UNIT

Duane L. Storandt, P.O. Box 6813, St. Louis, Mo. 63144

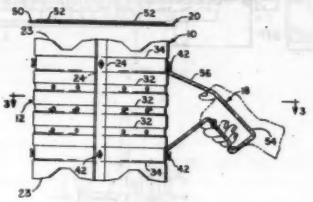
Continuation of Ser. No. 56,081, Jul. 9, 1979, Pat. No. 4,257,387.
This application Mar. 23, 1981, Ser. No. 246,867
The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ A47J 37/00; F24B 3/00
U.S. Cl. 126—25 B 14 Claims

1. A fire starter unit, comprising:

(a) a hollow body formed from a plurality of opposed pairs of adjacent interconnected panels, each panel including:
1. oppositely disposed upper and lower margin portions,
2. oppositely disposed side margin portions, and
3. at least one aperture disposed intermediate said side margin portions,

(b) fastener means connecting the side margin portions of adjacent panels,

(c) a grate received within the hollow body and including:
1. a plurality of upper members disposed in side-by-side spaced relation and having opposed ends,



2. a plurality of lower members disposed in side-by-side spaced relation, substantially perpendicular to said upper members and having opposed ends,
3. selected ends of said grate members being received within selected panel apertures to hold said grate in place within said hollow body, and
4. other selected ends of said grate members being disposed within the body adjacent said panels, and

(d) a carrying handle attached to the body.

4,331,126

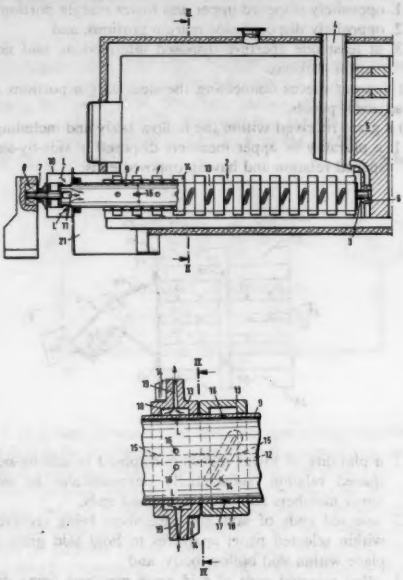
FURNACE FOR SOLID FUELS

Armin Holighaus, Eschenburg-Eiershausen, Fed. Rep. of Germany, assignor to Gebrüder Weiss K.G., Dillenburg, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,173
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932224
Int. Cl.³ F23H 1/02
U.S. Cl. 126—163 R 9 Claims

1. A furnace for solid fuels, comprising a furnace housing including a number of walls for forming a combustion chamber within said housing, means within said housing for forming an elongated grate trough which extends below said combustion chamber for charging solid fuel into said combustion chamber, blower means for providing combustion air, a tube extending within said grate trough so that the axis of said tube is parallel to the longitudinal axis of said grate trough, means for supporting said tube for rotation about its axis, blade means including a number of blade members arranged to extend radially outwardly relative to the outer circumferential surface of said tube to rotate together with said tube for conveying the solid fuel in the direction of the axis of said tube when said tube is rotated, said blade members having radially extending nozzle openings for distributing the combustion air into said combustion chamber, and air directing means arranged to communicate the

combustion air from said blower means to said nozzle openings in said blade members as said tube rotates so that the fuel and



the combustion air are simultaneously charged into said combustion chamber at a desired rate.

4,331,127

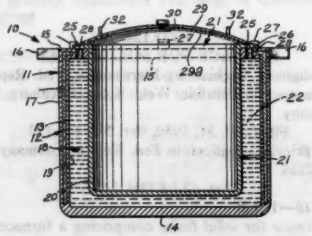
DOUBLE BOILER AND STEAM COOKER

Harry Grosso, 18 E. Main St., Somerville, N.J. 08876

Filed Apr. 3, 1980, Ser. No. 136,817

Int. Cl.³ A47J *27/21*; B65D *8/06*

U.S. Cl. 126—377 **2 Claims**



1. A double steam boiler cooker, comprising, in combination, an outer vessel, and an inner vessel removably placed inside said outer vessel, and a removable cover upon said inner vessel; a chamber being formed between an inner side of said outer vessel and an outer side of said inner vessel for holding water; said outer vessel comprising a bottom wall, a side wall and an inward flange at an upper edge of said side wall, said side wall and said flange containing a compartment therein, filled with insulation; said inner vessel comprising a bottom wall, a side wall and an outward flange at an upper edge of said side wall; said flange of said inner vessel resting upon said flange of said outer vessel; securement means between said vessels comprising a pair of outwardly projections on diametrically opposite sides of said inner vessel flange fitting under a pair of inwardly projecting, "L"-shaped members on diametrically opposite sides of said outer vessel flange; a plurality of openings through said outer vessel flange for access of water into said chamber, a removable plug closing each opening.

4,331,128

CLIMATE-CONTROLLED BUILDING

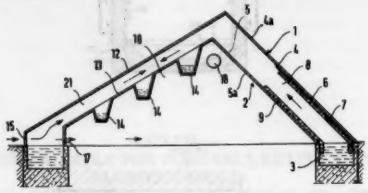
Karl Gebhardt, Blütenstrasse 16 A, 8500 Nurenberg 30, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,036

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939673; Feb. 19, 1980, 3006083

Int. Cl.³ F24J *3/02*; F28D *15/00*

U.S. Cl. 126—417 **17 Claims**



2. Apparatus for controlling the climate in a building comprising inclined inner and outer front walls defining two spaced front walls facing generally south to receive the sun, water supply means supplying water to the space between said inner and outer front walls such that the water is evaporated in said space by the heat of the sun and the humidity is thereby increased in said space, inclined inner and outer rear walls generally facing north and defining two spaced rearwardly facing walls connected to said inner and outer front walls respectively in a gabled arrangement such that the space between the inner and outer front walls is contiguous with the space between the inner and outer rear walls, a water reservoir means in communication with said space between said inner and outer front walls such that water in said water reservoir means provides a source of water for said water supply means, whereby the humidity-enhanced and heated air rises in said space between said front walls and then descends into said space between said rear walls, said descending air being cooled due to said rear walls facing north such that the moisture in said descending air is condensed in the space between said rear walls.

4,331,129

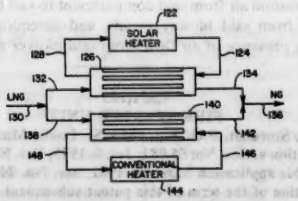
SOLAR ENERGY FOR LNG VAPORIZATION

Charles C. Hong, Columbus; David E. Price, Plain City, and William F. Morse, Columbus, all of Ohio, assignors to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Jul. 5, 1979, Ser. No. 55,008

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—427 **4 Claims**



1. Apparatus for vaporizing liquefied natural gas and the like comprising in combination solar heater means, a secondary source of heat and a heat exchanger means;

the solar heater means including a liquid with a freezing point below about −40° C. which is located within a structure having an open top for exposure to the rays of the sun; a plenum chamber filled with dry gaseous material located above the liquid, said plenum chamber comprises a cover in contact with ambient air and a water sheath adjacent said liquid, said chamber extending completely across the top of the structure to prevent contact between said liquid and ambient air, said cover and water sheath both being translucent to allow the rays of the sun to pass therethrough and into said liquid;

inlet and outlet means in said structure to permit said liquid to be withdrawn and reinserted; said inlet and outlet means being connected by liquid conducting means to said heat exchanger means;

means for forcing the liquid to flow from the structure, through the heat exchanger means and back to the structure;

the secondary source of heat including means for heating a fluid, means for conducting said fluid from said secondary source through said heat exchanger means and back to said secondary source;

means for conducting liquefied natural gas at a temperature of below about −162° C. through said heat exchanger means whereby it exists said exchanger above about 4° C.;

said heat exchanger means comprising two heat exchangers arranged in parallel, one of said exchangers being connected to the solar heater and the other being connected to the secondary source of heat; and

the means for conducting the liquefied natural gas to the heat exchanger means comprises two flow paths, one through each exchanger.

4,331,130

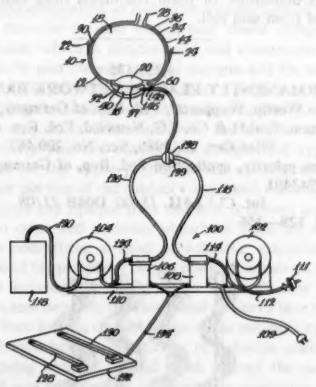
SECURING DEVICE TO THE CORNEA TO PREVENT ANTERIOR CHAMBER PROLAPSE

Andrew O. Lewicky, 2716 Blackhawk Rd., Wilmette, Ill. 60091

Filed Jun. 27, 1980, Ser. No. 163,518

Int. Cl.³ A61B *19/00*; A61M *7/00*

U.S. Cl. 128—1 R **10 Claims**



4. An apparatus for substantially preventing collapse of the anterior chamber of an eye during ophthalmic surgical procedures, comprising:

pneumatic pump means for pumping air into the anterior chamber of an eye;

liquid pump means for pumping saline solution and other liquids into the anterior chamber of the eye;

an eye-engaging infusion terminal for entering into the cornea of said eye and communicating with said anterior chamber, said eye-engaging infusion terminal having a shank and cornea-engaging connection means extending outward of said shank for connecting said infusion terminal to the cornea of said eye; and

fluid-flow connection means for operatively connecting said pneumatic pump means and said liquid pump means to said eye-engaging infusion terminal.

4,331,131

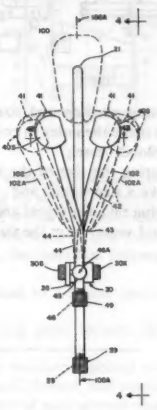
METHOD FOR TREATING CARCINOMA OF THE UTERINE CERVIX

Pullatikurthi P. Kumar, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Dec. 17, 1979, Ser. No. 104,358

Int. Cl.³ A61N *5/00*

U.S. Cl. 128—1.2 **10 Claims**



1. A method of treating carcinoma comprising the steps of:

inserting a tubular tandem and first and second tubular side assemblies through the vaginal orifice with the tandem extending into the uterus and the first and second side assemblies being positioned against the vaginal wall; and

emitting radiation from at least one of the tubular tandem and first and second tubular side assemblies;

the step of inserting the tubular tandem and first and second tubular side assemblies including the steps of inserting the tubular tandem with a mounting portion and a radiating portion attached to each other, inserting the first tubular side assembly with a first-tubular-side-assembly mounting portion and a first-tubular-side-assembly radiating portion attached together and inserting the second tubular side assembly with a second-tubular-side assembly mounting portion and a second-tubular-side assembly radiating portion attached together and with the mounting portions of each extending through the vaginal orifice in the sagittal plane and the radiating portions being located adjacent to the vaginal walls within a plane substantially perpendicular to the sagittal plane.

4,331,132

ANGIOSCOPE

Shizuo Mukasa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 136,097

Claims priority, application Japan, Apr. 5, 1979, 54/41348

Int. Cl.³ A61B *1/06, 5/02*

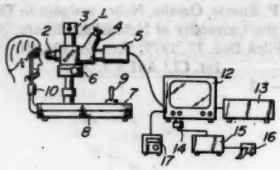
U.S. Cl. 128—6 **16 Claims**

1. An angioscope comprising a camera tube device having a reflection type illumination device for illuminating a blood vessel, an optical system for forming an image of the illuminated blood vessel and a photoelectric converting means for

receiving said image of a blood vessel to generate an image signal of the blood vessel;

a monitor means for receiving said image signal and displaying an image of the blood vessel on a screen by a known magnification;

means for displaying an index on the screen of the monitor means in a superimposed manner with the image of the blood vessel;



means for adjusting position and size of the index on the screen so as to make the index in correspondence with the image of the blood vessel;

means for measuring the size of the index displayed in the screen to derive a size signal; and

means for receiving said size signal and calculating an actual size of the blood vessel from the size signal and said magnification.

4,331,133

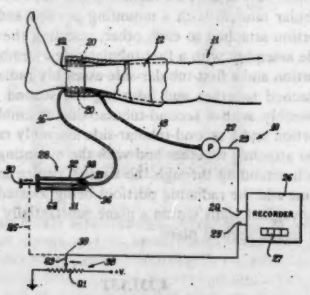
PRESSURE MEASUREMENT APPARATUS

Edward J. Arkans, Hoffman Estates, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Jun. 30, 1980, Ser. No. 164,136

Int. Cl.³ A61F 5/04

U.S. Cl. 128—87 R **13 Claims**



1. Apparatus for indirect measurement of the compression of an inflatable garment against a portion of a body, comprising:

a flexible, pressurizable member adaptable for compression between the inflatable garment and the body portion;

means for injecting the pressurizable member with a known amount of gas to produce bias pressure therein; and

means for measuring the total pressure within the pressurizable member due to the bias pressure and the compression of the inflatable garment.

4,331,134

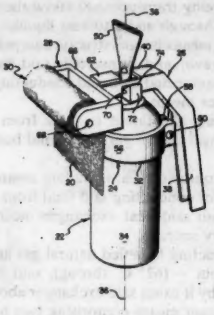
COMBINATION FOAM/BANDAGE DISPENSER FOR USE IN MAKING A MEDICAL CAST

William R. Brooks, and Irving C. Heinzel, both of 139 W. Commercial, Addison, Ill. 60101

Filed Jan. 16, 1981, Ser. No. 225,861

Int. Cl.³ A61F 5/04

U.S. Cl. 128—90 **8 Claims**



1. Dispensing apparatus for use in making a foam medical cast comprising: a yoke arrangement having bearing means for holding and allowing rotation of a bandage roll, said yoke arrangement further having mounting means for securing a foam chemicals canister in substantially rigid position relative to said bearing means and aligned along a longitudinal axis; and a manually operable handle, including a grip portion disposed generally parallel with said axis on one side thereof and an offset portion pivotally connected to said yoke arrangement on the opposite side of and spaced apart from said axis, said offset portion having intermediately disposed, canister valve actuating means aligned with said axis, whereby depression of said grip portion generally toward said axis imposes a substantially linear force at said canister valve actuating means for ensuring uniform deposition of foam chemicals onto bandage fabric unrolled from said roll.

4,331,135

PERMANENTLY ELASTIC NETWORK BANDAGE

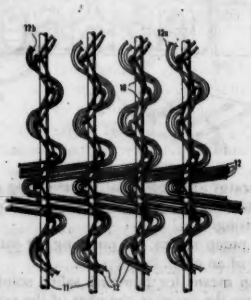
Wilhelm Westip, Wuppertal, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,487

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943401

Int. Cl.³ A61L 15/00; D04B 23/08

U.S. Cl. 128—156 **2 Claims**



1. A permanent elastic net-shaped bandage for medical purposes, comprising a fabric with elastic threads as warps and with non-elastic threads extending transverse thereto and

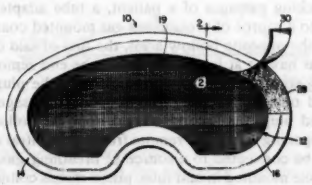
forming wefts, which includes in combination therewith: fringe warps independent of each other and formed by non-elastic threads, and backings of elastic synthetic threads backing said fringe warps, said fringe warps and said elastic synthetic threads being arranged substantially parallel to each other, said non-elastic weft threads and the respective adjacent wefts being arranged as upper wefts and lower wefts engaging the same area of the pertaining fringe warp and being interlaced by said fringe warps while said non-elastic upper and lower weft threads between skips from fringe warp to fringe warp are lying on the respective fringe warp in the form of a plurality of arcs, and said pertaining upper and lower weft threads extend at a substantially right angle to said fringe warps and said elastic synthetic threads.

4,331,136

LIGHT SHIELD

Frederick L. Russell, Charlottesville, and Charles M. Davis, Albemarle County, both of Va., assignors to Maximate Limited Partnership, Keswick, Va.

Filed Mar. 17, 1980, Ser. No. 131,002
Int. Cl.³ A61F *13/12*
U.S. Cl. 128—163 **4 Claims**



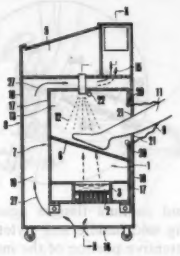
1. The combination of a shield for blocking essentially all light from both of a human subject's eyes simultaneously while allowing fluid circulation to and from that portion of the subject's face covered by said shield, said shield comprising a masking means which is dimensioned and constructed to extend superiorly past the supraorbital margins and the superciliary arches of the subject's head to cover a portion of the forehead overlying the frontal bone, laterally past the frontal process of the zygomatic bone and over the anterior temporal fossa, interiorly past the infraorbital margin and zygomatic arches to cover the upper portion of the maxilla, and down over a major portion of the subject's nose, said masking means being pervious and opaque over the area it covers and being made of an odor and moisture absorbent material, and said shield also comprising a band of adhesive extending completely around the periphery of said masking means on one side thereof for securing the shield to the subject's face and for providing a seal between the shield and subject's face that will keep light from leaking therebetween to the subject's eyes, said strip of adhesive being a constituent of a double coated tape, said tape being secured to said mask around the periphery thereof and said tape further comprising a protective strip on the side thereof opposite said masking means which can be removed to expose an adhesive on said opposite side of said masking means, and an accessory for extending the useful life of said shield, said accessory comprising a flexible backing member configured to match said band of adhesive, a separate band of adhesive on said backing member, and a protective strip covering said adhesive, whereby said accessory can be attached to said light shield and the protective strip of said accessory then removed to expose said separate band of adhesive thereby making it available for attaching the light shield to the subject's face.

4,331,137

APPARATUS FOR TREATING ATHLETE'S FOOT

Kiichiro Sarui, 26-15 Takadanobaba 4-chome, Shinjuku-ku, Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,602
Claims priority, application Japan, Jul. 22, 1980, 55-99343
Int. Cl.³ A61M *11/00*
U.S. Cl. 128—200.16 **1 Claim**



1. An apparatus for treating athletes's foot which comprises:
an outer box having an air intake port therein;
an inner box placed within said outer box such that there is a space between the walls of said outer box and the walls of said inner box, the inner box forming an aerosol chamber;
a heat source located in a lower portion of said aerosol chamber;
an aerosol generating plate located on top of said heat source;
an ultrasonic wave oscillator located within said chamber and affixed to a wall thereof, said oscillator being directed toward the interior of said aerosol chamber;
an exhaust port provided in an upper portion of said aerosol chamber so as to communicate with said outer box;
an exhaust filter and fan provided in an upper portion of said outer box and located adjacent to an outer exhaust port provided in one of the walls of said outer box so as to communicate with the atmosphere outside of said outer box, said fan causing a flow of air from said air intake port through said space between said outer box and said inner box through said exhaust filter and from said exhaust port through said exhaust filter to said atmosphere through said outer exhaust port;
an inserting port communicating with the aerosol chamber, said port being in common with one wall of both said outer and inner boxes;
and flexible sealing means for sealing said inserting port about a leg of a user.

4,331,138

METHOD OF PERFORMING AN EMERGENCY CRICOTHYROTOMY

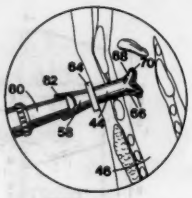
John W. Jessen, 421 Keeney, Evanston, Ill. 60202

Continuation of Ser. No. 22,424, Mar. 21, 1979, Pat. No. 4,291,690. This application May 26, 1981, Ser. No. 266,659
Int. Cl.³ A61B *17/32*; A61M *16/00*
U.S. Cl. 128—200.26 **5 Claims**

1. A method for performing an emergency cricothyrotomy comprising the steps of:
a. providing a self-contained, presterilized trocar assembly comprising a fluted stylet shaft with a self-limiting handle and a lancet cutting end and a flanged, self-retaining cannula mounted on said shaft;
b. hyperextending a patient's neck, locating the cricothyroid membrane space by palpation of the larynx and trachea;
c. inserting said trocar straight into the trachea through the skin and cricothyroid membrane of a patient and along an axis substantially perpendicular to the neck until said

self-limiting handle contacts the skin of the throat or until a hissing sound occurs as a result of air entering the patient's lungs;

d. holding the self-limiting handle of said trocar assembly against the outside surface of a patient's throat while pressing said flanges of said cannula unit toward the neck to fully insert the cannula into the trachea;



e. holding said cannula flanges against the throat while withdrawing said handle and stylet from the cannula to actuate a retentive portion of the intratracheal part of the cannula to secure the cannula within the trachea;

f. blunting said stylet and reinserting it in said cannula as a tool for deactivating said retentive portion of the cannula to facilitate a removal of the cannula from the throat; and

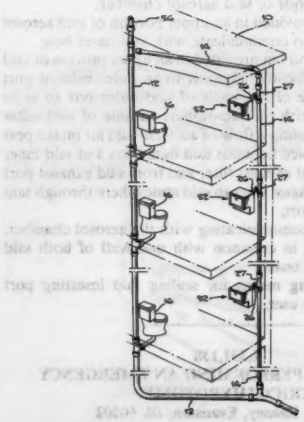
g. closing the incision in the throat made by said lancet.

4,331,139

EMERGENCY BREATHING APPARATUS

Mihai Popa, 4803 Bonvue Ave., Los Angeles, Calif. 90027

Filed Jun. 15, 1981, Ser. No. 273,732
Int. Cl.³ A62B 7/00
U.S. Cl. 128—202.13 **20 Claims**



1. In a structure having sewer pipe means for waste disposal and having vent pipe means connected between said sewer pipe means and the atmosphere for exhausting fumes from said sewer pipe means to the atmosphere, an emergency breathing system for said structure, comprising:

at least one air collector means, disposed within said structure in direct fluidic communication with said vent pipe means, for collecting air from said vent pipe means;

at least one valve means, connected to said air collector means, for enabling air within said air collector means to flow out of said air collector means; and

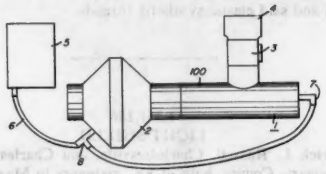
breathing mask means, coupled to said valve means, for allowing a human user to inhale air from said vent pipe means and to exhale air into said structure, whereby when said structure is filled with smoke from a fire, said air in said vent pipe means may sustain the life of said human user.

4,331,140

SHUTTLE VALVE

Brian Hallsey, Apt. 4, River House, Penobscot Sq., Brewer, Me. 04412

Filed Jul. 30, 1979, Ser. No. 61,676
Int. Cl.³ A61M 16/00
U.S. Cl. 128—204.26 **3 Claims**



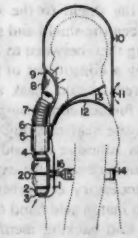
1. A shuttle type needle valve comprising a three armed body having first and second opposite hollow arms and a central hollow arm all in communication with each other, said central hollow arm including means adapted to be connected to the breathing passages of a patient, a tube adapted to be connected to a source of pressurized gas mounted coaxially in the first of the opposite hollow arms, the first of said opposite hollow arms having at least one plug in the end remote from said central arm, said tube mounted through the plug in the first of said opposite hollow arms to permit passage of gas through said plug, the second of said opposite hollow arms having an opening at the end remote from said central arm and adapted to be connected to a source of breathing gas, needle means slidable mounted in said tube, piston means connected to said needle means, said needle and piston means slidable toward the first hollow arm to seal said tube when suction is applied to the central arm, gas pressure from the tube urging said needle and piston means toward the second hollow arm to seal said second hollow arm when the suction stops in the central arm.

4,331,141

ARRANGEMENT FOR PROTECTION OF ORGANS OF RESPIRATION

Naum Pokhis, 30-36 Magaw Pl., Apt. 5D, New York, N.Y. 10033

Filed Apr. 10, 1979, Ser. No. 28,849
Int. Cl.³ A62B 7/10
U.S. Cl. 128—204.28 **2 Claims**



1. An arrangement for protecting organs of respiration, comprising

a closing element adapted to close the user's nose and mouth;

a filtering element communicating with said closing element so that ambient air can pass through said filtering element

to be cleaned therein and thereafter supplied in cleaned condition into said closing element to be aspirated by the user;

means for forcedly urging the ambient air to flow and to pass through said filtering element, said means including an urging element actuated in response to the inspiration performed by the user, and formed as a deformable container which has an inner chamber including one way valve means providing one way flow of ambient air into said chamber and an outlet connected with said filtering element; and

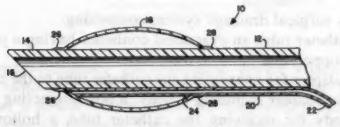
means for mounting said deformable container on the user's thorax so that when the user performs inspiration and the volume of thorax increases, said container is deformed and the volume of said inner chamber decreases whereby the ambient air which enters said inner chamber of said container is urged to flow to and through said filtering element.

4,331,142

CUFFED TRACHEAL TUBE

Peter J. Degen, Dayton, Ohio, assignor to Riverain Corporation, Dayton, Ohio

Filed Jan. 3, 1980, Ser. No. 109,370
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.15 **8 Claims**



1. A tracheal tube comprising

(a) an elongated shaft for extending into the trachea of a patient to deliver anesthetic and other gases into the lungs of the patient, said shaft having an outer surface and proximal and distal ends,

(b) an inflatable 2–8 mil thick cuff mounted on the outer surface of said elongated shaft adjacent to said distal end, said cuff being made of a polyurethane material having as components a multifunctional isocyanate, a low molecular weight chain extender, a difunctional polyester diol and a cross-linking agent,

said cuff having a nitrous oxide gas permeability of less than 10,000 cc/mil/100 sq. in/24 hrs/atms of 100% nitrous oxide.

said cuff also having a Youngs Modulus of less than about 2000, a tensile strength of greater than about 3000 psi, a break elongation of around 100–700% and an elongation set of less than about 20%, and

(c) a gas passageway having one end communicating with the interior of said inflatable cuff and having the other end adapted to receive an inflating means for delivering gas to inflate said cuff.

4,331,143

ENDOTRACHEAL TUBE HOLDER

Billy R. Foster, 1040 Glen Common, Livermore, Calif. 94550

Filed Jul. 11, 1980, Ser. No. 167,419
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.17 **10 Claims**

1. An endotracheal tube holder, comprising:

a support member including means adapted to be placed over, and upwardly supported by, the nose of the patient;

attachment means for attaching said support member to the patient's face, holding said support member firmly in place against the patient's nose and providing lateral support to said support member,

a tube holder member adapted to firmly engage and hold in place an intubated endotracheal tube;

connecting means providing rigid mechanical support between said support member and said tube holder member such that said tube holder member is positioned immediately in front of the patient's mouth when said support member is emplaced over the patient's nose;

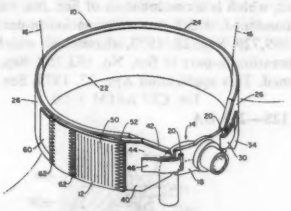
said attachment means includes a main strap adapted to extend around the back of a patient's head, the two ends of said main strap being attached to either side of said support member, whereby said support member is maintained in place, and two supplemental straps, one end of each supplemental strap being attached to said connecting means, the opposite ends of each supplemental strap being further connected at positions along said main strap on opposite sides of said support member, whereby said support member is maintained in place.

4,331,144

BAND FOR SUPPORTING TRACHEOSTOMY TUBES OR THE LIKE

Herbert H. Wapner, Belmont, N.H., assignor to Baka Manufacturing Company, Inc., Plainville, Mass.

Filed Sep. 17, 1980, Ser. No. 187,968
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—207.17 **2 Claims**



1. A band intended to encircle the neck or head and support tracheostomy or endotracheal tubes or the like having flanges with openings to which the band may be secured comprising

a primary strap made of non-stretchable material and having a soft sponge-like inner layer intended to lie against the skin when the band encircles the neck or head and an outer layer of looped material with the loops extending out of the face of the strap,

a narrow, first, male, Velcro-type fastener permanently secured at one end to an end of the outer face of the outer layer of the strap with its hooked surface facing away from the strap and adapted to be threaded through an opening on a flange of the tube and be turned over so that the hooks beyond the opening may be pressed against the loops and lock onto them so as to retain the flange,

a short secondary strap having a first portion thereof made of elastic webbing with a soft backing material, and a second portion which forms an extension of the first portion and made of the same material as the primary strap,

a second, narrow, male, Velcro-type fastener permanently secured to the free end of the second portion of the secondary strap in the same manner that the first fastener is secured to the first strap so that it can be threaded through an opening in the flange of the tube to retain the flange,

and a male Velcro-type coupling on the back of the webbing material adjacent its free end with the hooks facing rearwardly on the webbing so that it may releasably lock onto the front face of primary strap so that the band may comfortably encircle the neck or head and have an adjustable length.

4,331,145

MULTIPLE SCLEROSIS TREATMENT

Arthur Winter, 44 Holly Dr., Short Hills, N.J. 07078

Filed Jan. 28, 1981, Ser. No. 229,045

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—207.21 **5 Claims**

1. A method of treating patients exhibiting symptoms of multiple sclerosis to reduce spasm and permit more normal functioning which comprises the steps of administering a course of treatment which includes transcutaneous neurostimulation and concomitant and subsequent administration of oral doses of d-phenylalanine for at least a period of time sufficient to extend the therapeutic effects of the transcutaneous neurostimulation.

4,331,146

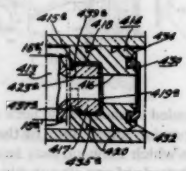
SYRINGE ASSEMBLY

Dominic J. Brignola, Phoenixville, Pa., assignor to The West Company, Phoenixville, Pa.

Continuation-in-part of Ser. No. 753,954, Dec. 23, 1976, abandoned, which is a continuation of Ser. No. 467,790, May 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 399,729, Sep. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 182,759, Sep. 22, 1971, abandoned. This application Apr. 27, 1979, Ser. No. 34,461

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—218 DA **12 Claims**



1. A container for a syringe assembly or the like comprising an elongated generally cylindrical body portion having a discharge opening at one end, a diaphragm mounted over said discharge opening and means engageable with said diaphragm having a bore therein with a central axis offset relative to the central axis of said discharge opening whereby increase in pressure in said container effects displacement of at least a portion of said diaphragm to permit flow through said discharge opening.

4,331,147

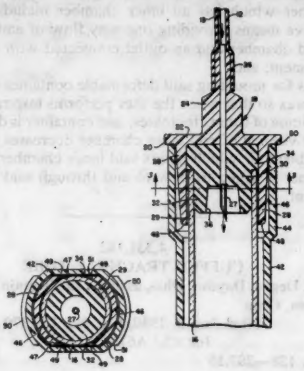
SYSTEM FOR DRAINING WOUNDS

Lee C. Armstrong, Atlanta, Ga., assignor to Glasrock Products, Inc., Fairburn, Ga.

Filed Jul. 1, 1980, Ser. No. 164,923

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **14 Claims**



1. A surgical drainage system comprising:

a catheter tube; an evacuated container having a pierceable stopper; and

an adapter for connecting the catheter tube to the container, the adapter including a body, a post projecting from the body for receiving the catheter tube, a hollow needle extending from the body, and a pair of guide flanges extending from the body on opposite sides of the needle and engaging the stopper to guide the adapter into a position on the container in which the needle pierces the stopper, said hollow needle, said body, and said post defining a passageway from said catheter tube to the interior of said container when said catheter tube is received on said post and said needle pierces said stopper.

4,331,148

DEODORIZING OSTOMY BAG COVER

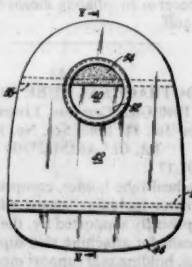
Peter L. Steer, and John V. Edwards, both of East Grinstead, England, assignors to Kingsdown Medical Consultants Limited, London, England

Filed Jul. 30, 1980, Ser. No. 173,786

Claims priority, application United Kingdom, May 16, 1979, 7917129; Aug. 8, 1979, 7927623

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—283 **5 Claims**



2. A deodorizing cover bag for substantially enclosing an ostomy bag including a front wall having a top edge, a bottom edge, and side edges, a pocket wall secured to said front wall

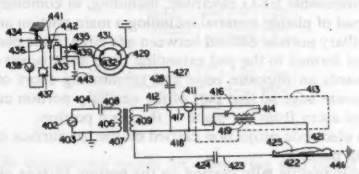
bottom edge and the lower portions of said front wall side edges, a rear wall secured to said front wall top edge and said front wall side edges, said rear wall having an opening dimensioned and positioned to permit the enclosed ostomy bag to be coupled to the body of the user, said rear wall overlapping but not connected to said pocket wall, and a patch of activated carbon filtering material sewn into place on the inside of said front wall and extending from said front wall top edge downward along a portion of said front wall.

4,331,149

ELECTROSURGICAL DEVICE

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corp., Milford, Del.

Division of Ser. No. 543,489, Jan. 23, 1975, Pat. No. 4,237,887.
This application Jun. 28, 1976, Ser. No. 700,608
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.14 **4 Claims**



1. A radio-frequency electrosurgical device which comprises a radio-frequency generator having a power output means and a power return means for supplying a radio-frequency potential between the power output means and the power return means, an active power lead, means for coupling the active power lead to the power output means, a return lead, means for coupling the return lead to the power return means, an active electrosurgical electrode, means for coupling the active power lead to the active electrosurgical electrode to power the active electrosurgical electrode, a passive electrode, means for coupling the passive electrode to the return lead, alternate path return means for coupling the return lead to ground, an electrical shield surrounding the active power lead, means for connecting the shield to ground through the return lead and the alternate path return means, and monitor means in the alternate path return means for indicating a predetermined radio-frequency current return in the alternate path return means.

4,331,150

APPROXIMATOR FOR ANASTOMOTIC SURGERY

Karl Braun, Talheim; Fritz Hilzinger, Emmingen-Liptingen, and Erich Wintermantel, Tübingen, all of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft Vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,612
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908209
Int. Cl.³ A61B *17/11*
U.S. Cl. 128—334 C **6 Claims**

1. An approximator, comprising

two guide bar pairs each comprising parallel guide bars connected to each other rigidly on one of their adjacent ends, respectively,

at least one clamp being disposed on each of said two guide bar pairs, at least one of said at least one clamp being mounted longitudinally displaceable on each of said two guide bar pairs and fixable thereon in any displaced position,

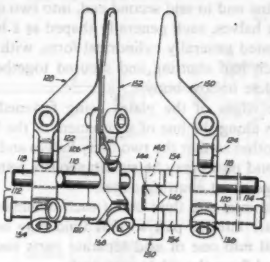
a third guide bar pair comprising parallel guide bars,

at least one additional clamp being mounted longitudinally displaceably and fixably on said third guide bar pair,

means for pivotally connecting said third guide bar pair with said two guide bar pairs and for fixing said third guide bar pair in selective relative positions with respect to said two guide bars pairs,

said two guide bar pairs are rigidly connected with one another at a connection point and are disposed parallel one behind the other, corresponding of said guide bars of each of said guide bar pairs are oriented in one plane, respectively, the respective planes of different of said corresponding guide bars of each of said guide bar pairs being parallel to each other in all said relative positions,

said means being for articulating said third guide bar pair at said connection point of said two guide bar pairs,



said clamps are constructed as forceps each having two tong arms,

screw means for adjusting said tong arms with respect to each other, said screw means has a head operatively acting on one of said two tong arms,

at least one of said clamps includes a clamp holder means for mounting said at least one of said clamps on a corresponding of said guide bar pairs, and

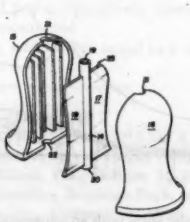
said pivotally connecting means constitutes a unitary combined means for pivotally connecting and fixedly stabilizing said guide bar pairs in the selective relative positions connected to said guide bar pairs at a single pivot point thereof.

4,331,151

HEMORRHOID BANDAGE

Theodore A. Golden, 755 W. Big Beaver Rd., Troy, Mich. 48084

Filed Sep. 8, 1980, Ser. No. 185,259
Int. Cl.³ A61F *7/12*; A61B *17/36*
U.S. Cl. 128—401 **5 Claims**



1. A thermally controllable bandage comprising an elongated, hollow interior, thin wall, generally cylindrically shaped body having a first end and a second end, and being of a size for positioning within a human body cavity with the second end exposed at an open end of the cavity;

a tube extending through the length of the body and opening exteriorly of said bandage body at both ends of the bandage body;

a fluid inlet and a fluid outlet each formed at the body second end for flowing fluid of predetermined temperature

into the hollow interior of the body and for removal of the fluid from the body interior;

a thin panel formed inside the hollow interior of the body and extending transversely thereof from side-to-side of the body to the tube, so that the panel together with the tube form a wall for dividing the interior of the body into separate parts;

said panel formed of a pair of coplanar thin, flat plates formed integral with a portion of said tube and extending diametrically outwardly of said tube so that the tube and panel form a single unit interiorly of said hollow body

said tube extending beyond the ends of said panel;

said panel and tube dividing said body longitudinally, from said first end to said second end, into two opposed mirror image halves, each generally shaped as a hollow bell-like elongated generally cylindrical form, with the free edges of each half abutting and secured together to form the complete hollow body;

the free edges of the plates being fastened to said body halves along the line of securement of the body halves to each other so that the two body halves and the single unit tube and panel may be simultaneously joined together at their adjacent abutting edges;

said fluid inlet and fluid outlet each communicating with a separate interior part so that fluid may be continuously flowed into one of said separate parts and continuously drained from the other part; and

said panel ends terminating a distance inwardly of said body first end so that fluid can flow between said separate interior parts;

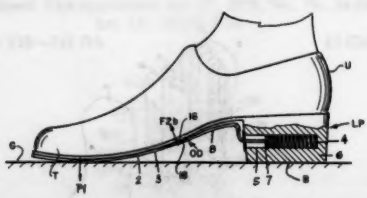
wherein the body may provide a predetermined, controlled temperature for extended periods of time and gases and fluids of the human body may be expelled through the tube.

4,331,152

ORTHOPEDIC SHOE

Bruno Bartoli, Via Risorgimento, Monsummano Terme (Pistoia), Italy

Filed Sep. 2, 1980, Ser. No. 183,438
Claims priority, application Italy, Aug. 31, 1979, 9524 A/79
Int. Cl.³ A61F *5/14*
U.S. Cl. 128—591 **12 Claims**



1. An orthopedic shoe with an automatically erectile tip and having a heel, comprising:

a flexible and elastic metal plate having one end fixed to a front part of the sole means of the shoe, and

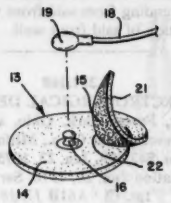
thrust means having one end operatively connected with the other end of said metal plate and another end operatively associated with said heel for movement therein responsive to the portion of said metal plate on which the wearer exerts body weight and for movement of said metal plate to move the sole means to move the tip of the shoe from a position in contact with a walking surface to a raised position away from the walking surface.

4,331,153

DISPOSABLE EKG ELECTRODE

James W. Healy, 6462 Surfside Way, Malibu, Calif. 90265

Filed Nov. 13, 1980, Ser. No. 206,528
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—641 **2 Claims**



1. A disposable EKG electrode, including, in combination:

(a) a pad of pliable material including a main portion and an auxiliary portion defined between one edge of the pad and a cut formed in the pad extending from an adjacent edge towards an opposite edge and terminating short of the opposite edge so that part of the auxiliary portion can be lifted away from the plane of the main portion;

(b) an electrode projection carried on the top surface of the main portion;

(c) a conductive jelly carried on the bottom surface of said main portion in electrically conductive contact through the main portion with said electrode projection so that a cable terminating in an electrode snap fastener received on said projection is electrically connected to said conductive jelly; and,

(d) an adhesive material on the remaining portion of the bottom surface of the pad not covered by said conductive jelly

whereby the bottom surface of the main portion of the pad can be pressed against a patient's skin so that the conductive jelly is held against the skin by the adhesion of the main portion of the pad to the skin and the auxiliary portion of the pad lifted away from the plane of the main portion so that the cable can be passed under the auxiliary portion so that the auxiliary portion will overlie at least one portion of the cable extending from the snap fastener and hold the same to the patient's skin so as to inhibit relative movements between the snap fastener and electrode projection when portions of the cable beyond said one portion move and thereby avoid generation of artifacts.

4,331,154

BLOOD PRESSURE AND HEART RATE MEASURING WATCH

Ronald L. Broadwater, 2428 Eastridge Rd., Timonium, Md. 21903; Russell R. Haynes, Morgantown, and Samah A. Mitry, Star City, both of W. Va., assignors to Tech Engineering & Design, Morgantown, W. Va. and Ronald L. Broadwater, Sr., Timonium, Mo.

Filed Oct. 15, 1979, Ser. No. 84,961
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—677 **16 Claims**

1. Apparatus for measuring blood pressure, comprising:

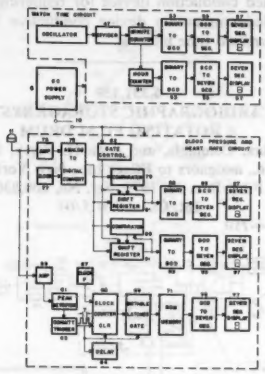
transducer means for generating an electrical signal having an amplitude corresponding to the magnitude of applied pressure;

means for pressing at least a portion of said transducer means adjacent an area of a body where blood pressure pulses may be detected, the transducer means generating electrical pressure pulses corresponding to the detected blood pressure pulses, each of the electrical pressure pulses defining a maximum voltage over a systolic interval and a minimum voltage over a diastolic interval;

analog to digital converter means for sampling the voltage

amplitude at a plurality of points on each electrical pressure pulse and for generating a coded data word for each sampled voltage, the data word defining the pressure corresponding to the sampled voltage amplitude;

systolic comparator means for comparing said coded data words and storing the data word defining the highest pressure;



diastolic comparator means for comparing said coded data words and storing the data word defining the lowest pressure; and

pressure display means for displaying a representation of the stored data word of the systolic comparator and of the diastolic comparator.

4,331,155

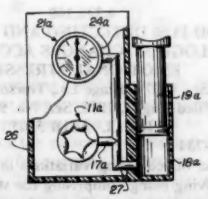
DIGITAL CUFF APPARATUS FOR DETERMINING BLOOD PRESSURE WITHOUT USE OF A STETHOSCOPE

Alvin H. Sacks, 12682 Roble Veneno, Los Altos Hills, Calif. 94022

Continuation-in-part of Ser. No. 841,241, Oct. 11, 1977, Pat. No. 4,202,347, which is a continuation-in-part of Ser. No. 750,077, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 584,102, Jun. 5, 1975, abandoned. This application Jan. 2, 1980, Ser. No. 109,051

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—686 **15 Claims**



1. A device for determining systolic and diastolic blood pressures comprising an inelastic annular cross-section cuff to encircle a digit, an inflatable tubular diaphragm extending around the entire inside of said cuff inflatable to affect blood flow through said digit, a pressurizing member, duct means communicating from said pressurizing member to the interior of said diaphragm, whereby pressurizing said pressurizing member pressurizes said diaphragm to cut off blood flow through said digit, indicator means for reading the gaseous pressure in said pressurizing member at different pressures to determine said pressure at the onset and cessation of Korotkoff phenomena by using subjective localized arterial sensations within the cuff, the ends of said tubular diaphragm being turned back over the ends of said cuff, and seal means at opposite ends of said cuff to form an air-tight seal of said ends of said tubular diaphragm with said cuff, said duct means opening into said cuff intermediate said seal means.

4,331,156

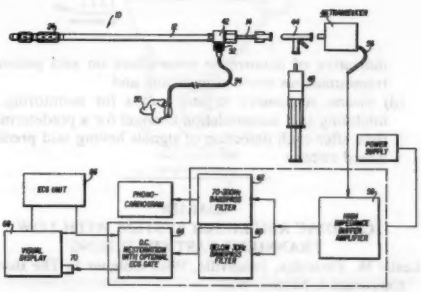
ESOPHAGEAL CARDIAC PULSE MONITORING APPARATUS AND METHOD

Howard P. Apple, and Paul J. Dauchot, both of Cleveland Heights, Ohio, assignors to University Patents, Inc., Norwalk, Conn.

Filed Mar. 28, 1980, Ser. No. 134,819

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—688 **25 Claims**



1. An improved probe apparatus for an esophageal stethoscope, comprising:

at least one flexible lumen adapted for insertion into the human esophagus, whereby pressure variations transmitted to the esophagus from the lungs and the heart are transmitted through said at least one lumen to a point outside the body;

transducer means operatively associated with said at least one lumen and responsive to said pressure variations for producing an electrical signal proportional to the varying frequency and intensity of said pressure variations;

signal processing means connected to said transducer means for filtering from said electrical signal low frequency components attributable to respiratory noises from the lungs and higher frequency components attributable to heart noises and thereby producing a further sub-audible signal proportional to the cardiac pulse waveform;

a source of electrical power operatively connected to said signal processing means; and

means for conveying said further signal to a signal display apparatus.

4,331,157

MUTUALLY NONINTERFERING TRANSCUTANEOUS NERVE STIMULATION AND PATIENT MONITORING

John W. Keller, Jr., Miami, Fla.; William E. Bursack, New Brighton, and Alan Coombes, Brooklyn Park, both of Minn., assignors to Stimtech, Inc., Minneapolis, Minn.

Filed Jul. 9, 1980, Ser. No. 167,268

Int. Cl.³ A61B *5/04*

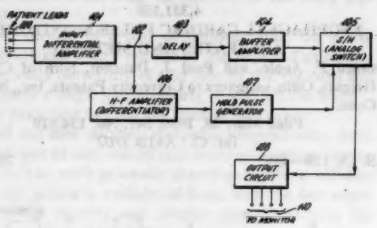
U.S. Cl. 128—419 R **6 Claims**

1. Apparatus for the conduct on a patient of simultaneous, mutually non-intefering electrocardiograph monitoring (EKG) and transcutaneous electrical nerve stimulation for pain control comprising:

(a) EKG means for sensing electrical signals from the body of said patient including the cardiac rhythms, said EKG means including electrode means and an EKG data accumulation channel for receiving data from said electrode means;

(b) transcutaneous nerve stimulation means for direct application to the subject of intermittent pain control pulses of electrical energy;

(c) means for monitoring said EKG means to detect signals meeting predetermined amplitude and frequency criteria



indicative of occurrence somewhere on said patient of transcutaneous nerve stimulation; and

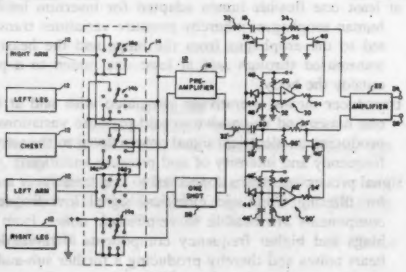
(d) means, responsive to said means for monitoring, for inhibiting said accumulation channel for a predetermined time after each detection of signals having said predetermined criteria.

4,331,158

CARDIAC AMPLIFIER SYSTEM WITH LOW TRANSIENT FAST SWITCHING

Leslie W. Partridge, Janesville, Wis., assignor to The Burdick Corporation, Milton, Wis.

Filed Aug. 21, 1980, Ser. No. 180,158
Int. Cl.³ A61B 5/04
U.S. Cl. 128—709 **16 Claims**



1. An amplifier switching system comprising:

a plurality of input leads;

an amplifier having an input;

means including a coupling capacitor coupled to said input for supplying electrical signals to said amplifier;

switching means coupled between said input leads and said coupling capacitor for changing input connections to said amplifier;

first direct current conductive means coupled in series with said coupling capacitor for controlling the flow of current through said coupling capacitor;

second direct current conductive means coupled in series with said coupling capacitor and the input to said amplifier;

a first controlled conduction device having main terminals coupled in series with said first direct current conductive means and said coupling capacitor, said first controlled conduction device also having a control terminal;

a second controlled conduction device having main terminals coupled in series with said first and second direct current conductive means and said coupling capacitor, said second controlled conduction device also having a control terminal;

first means responsive to the actuation of said switching means coupled to the control terminal of said first controlled conduction device for rendering said first controlled conduction device conductive for a first predetermined time interval following the actuation of said switching means; and

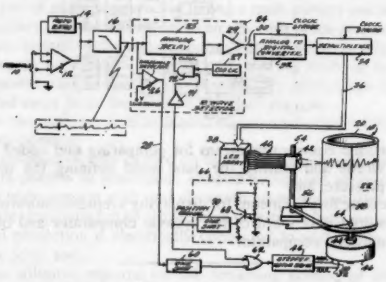
second means responsive to the actuation of said switching means coupled to the control terminal of said second controlled conduction device for rendering said second controlled conduction device conductive for a second predetermined time interval.

4,331,159

ELECTROCARDIOGRAPHIC STORAGE SYSTEM USING A ROTATING FILM DRUM

Ronald F. Bax, Columbia, and John H. Perry, Silver Spring, both of Md., assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,830
Int. Cl.³ A61B 5/04
U.S. Cl. 128—710 **25 Claims**



1. A method for storing an electrocardiograph (ECG) signal on a rotatable photosensitive record comprising the steps of:

generating an optical signal in response to and representative of the ECG signal;

detecting the presence of a predetermined portion of each ECG signal and generating a synchronization signal responsive thereto;

incrementally rotating the photosensitive record at a predetermined rotational rate for a predetermined period of time in response to each said synchronization signal; and

recording said optical signal thereon during said rotating step.

4,331,160

METHOD FOR DETECTINC AND RECORDING PHYSIOLOGICAL CHANGES ACCOMPANYING EMOTIONAL STRESSES

John J. Zito, Sr., 1527 Cottage La., Towson, Md. 21204

Filed Aug. 1, 1978, Ser. No. 929,907
Int. Cl.³ A61B 5/05
U.S. Cl. 128—734 **4 Claims**

1. A method of indicating variations in resistance across a portion of a living being comprising the steps of:

connecting a pair of electrodes in spaced relation across said portion of a living being and into one arm of a Wheatstone bridge, thereby to complete the circuit through said arm with said living being,

providing a variable resistance in a second arm of the bridge,

amplifying the outputs of the two bridge arms to provide amplified outputs therefor,

connecting a measurement display means to the said amplified bridge outputs to show the condition of the living being,

initially balancing the said amplified outputs to a null condition by adjusting said variable resistance while the electrodes are in contact with the living being and prior to a

predetermined test sequence to be administered to the living being,

thereafter successively rebalancing the outputs to an indicated null condition while the electrodes are in contact with the living being at predetermined timed intervals following each response of the living being during the predetermined test sequence,

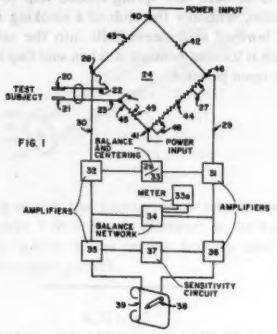


FIG. 1

interrogating the living being as a portion of the said test sequence, and,

displaying the determined condition of the living being on the measurement display means over a period of time during said test sequence.

4,331,161

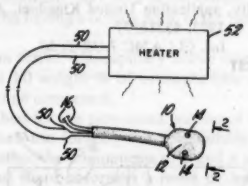
PATIENT SENSOR CONTINUITY DETECTOR

Anilbhai S. Patel, White Plains, N.Y., assignor to Healthdyne, Inc., Marietta, Ga.

Continuation-in-part of Ser. No. 40,614, May 17, 1979, abandoned. This application Jun. 4, 1979, Ser. No. 45,562

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—736 **4 Claims**



1. A device for detecting a discontinuity in the communication of a temperature sensor with a patient, comprising:

(a) a patient temperature sensor adapted to be juxtaposed with the skin of the patient and adapted to actuate and control a heater for warming the patient,

(b) a detector at the sensor for detecting at least partial separation of the sensor from said juxtaposition with the patient, said detector comprising a pair of electrically conducting probes extending from the surface of the sensor and spaced apart and electrically insulated from each other on the sensor for contact with the patient's skin when the sensor is operatively juxtaposed with the patient;

(c) circuit means including electrical supply means connected to the probes for passing a minute electrical current between the probes through the patient's skin, and

(d) an alarm within said circuit means and operatively connected to said electrical supply means and to said probes, said alarm being actuated in response to an interruption in the current between the probes consequent to separation of either probe from the skin of the patient, thereby indicating detection of the discontinuity.

4,331,162

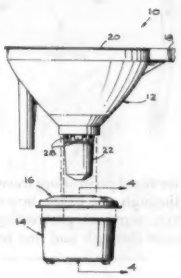
URINE SPECIMEN COLLECTING DEVICE AND METHOD OF USE

David H. Kuntz, Los Angeles, and James A. Ingram, Costa Mesa, both of Calif., assignors to SHS Enterprises, Ltd., Newport Beach, Calif.

Filed Apr. 19, 1979, Ser. No. 31,427

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—761 **32 Claims**



1. A urine specimen collecting device for selectively collecting a mid-stream portion of voided urine, the device comprising in combination:

a collector having first, second and third exits for different portions of the voided urine, the first exit being positioned near the bottom of the collector for bleeding off the first-voided urine, the second exit being positioned above the first exit for transferring the desired mid-stream portion of urine to an associated specimen container, the third exit being positioned above the second exit for transferring excess urine from the collector;

a bleed-off conduit extending between the first and second exits of the collector;

a generally toroidally-shaped specimen container configured for releasable mounting on the bleed-off conduit in position surrounding said conduit for receiving urine flowing through the second exit; and

a flexible lid sealingly mounted on the specimen container about the periphery thereof and having a central ring opening spaced from the container to define an opening adjacent the second exit for receiving a specimen of urine into the container.

4,331,163

MEDICAL TREATMENT GLASSES

Haruo Nomura, 9–14, Kumata 8-chome, Higashi-sumiyoshi-ku, Osaka, Japan

Filed Aug. 11, 1980, Ser. No. 177,090

Int. Cl.³ A61N *1/18*

U.S. Cl. 128—793 **5 Claims**

1. A medical treatment glasses comprising:

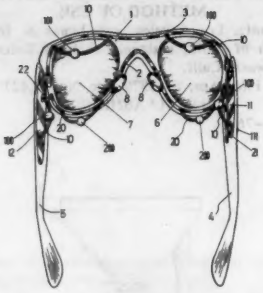
a pair of glasses including a pair of lenses, rims surrounding the lenses, and a pair of bows extending in one direction from the rims perpendicular to the lenses,

a pair of electric conductors laid on the bows and the rim of said glasses in a manner that they substantially surround the pair of lenses of said glasses,

a first series of plural electrodes attached to given portions of one of said conductors; each of said electrodes comprising a semicircular spring, flexibly protruding inwards from the bows and rim of said glasses, and an almost spherical piece movably supported on the spring,

a second series of plural electrodes attached to given por-

tions of the other of said conductors; each of said electrodes comprising a semicircular spring, flexibly protruding inwards from the bows and rim of said glasses, and an almost spherical piece movably supported on the spring,



a first electric terminal protruding outward from one of said conductors through one of the bows of said glasses, and

a second electric terminal protruding outward from the other conductor through said one bow of said glasses.

4,331,164

ASH-TRAY

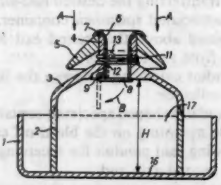
Peter Bodenmann, Pfaffhausen, Switzerland, assignor to Albin Steinmann, Wallisellen, Switzerland, a part interest

Filed Mar. 26, 1980, Ser. No. 134,063

Claims priority, application Switzerland, Apr. 3, 1979, 3077/79

Int. Cl.³ A24F *13/18, 19/14*

U.S. Cl. 131—235 R **13 Claims**



1. In an ash-tray of the kind including an ash compartment having a floor, and a moveable closing element which closes off the ash compartment at the top;

the improvement comprising:

a wall extending upwardly from the floor of the ash compartment;

an upwardly extending sleeve supported by said wall at a distance from the floor of the ash compartment;

said sleeve defining a bore which only slightly exceeds the diameter of given commercially available smoking items;

said moveable closing element comprising a spring-loaded flap pivotally connected at the lower terminal region of said sleeve around a horizontal axis for selectively opening and closing off said bore, said spring loading normally maintaining said flap in a position to close off said bore; and

actuating means operatively coupled to said spring-loaded flap for pivotally moving said spring-loaded flap into an open position for opening the bore to such an extent to permit a smoking item to substantially freely fall through the bore of said sleeve and past said open spring-loaded flap, said actuating means comprising an annular disc member slideably and substantially coaxially mounted around said sleeve, a spring biasing said disc member upwardly relative to said sleeve, and an intermediate member operatively coupled between said disc member and said spring-loaded flap for causing said spring-loaded flap to open said bore when downward pressure is exerted on said disc member, said intermediate member including a pin or rod-shaped member slideably movable longitudinally of said sleeve, said pin or rod-shaped member being arranged to be slideably moved by said annular disc member to actuate said spring-loaded flap to the bore open position, whereby the stub of a smoking item inserted in said bore of said sleeve falls into the ash compartment which is located beneath it when said flap is actuated to its bore open position.

4,331,165

VENTILATED CIGARETTES

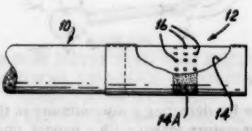
David J. Farrar, Dulwich, England; Ralph W. Beck, Richmond, Va.; Edward G. Preston, and Robert E. Williams, both of Deptford, England, assignors to Molins, Ltd., London, England

Continuation of Ser. No. 931,013, Aug. 4, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 221,334

Claims priority, application United Kingdom, Aug. 5, 1977, 32970/77; Nov. 1, 1977, 45313/77

Int. Cl.³ A24C *1/38, 5/60*

U.S. Cl. 131—281 **24 Claims**

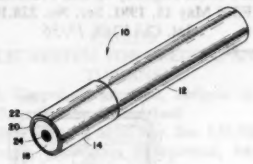


1. In a method of making ventilated cigarettes in which filter portions are joined to wrapped tobacco portions by pre-perforated web portions forming uniting bands which are wrapped around the filter portions and overlap and are secured to the ends of the tobacco portions, the improvement comprising the step of heavily perforating the wrappers of complete filter rods used to form the said filter portions with a large number of perforations, before the filter portions are surrounded by the associated uniting bands, over areas which are to lie within the perforations in the uniting bands when the cigarettes are complete, the operation by which the wrappers of the filter portions are perforated comprising perforating in such a way as to make the surface of the filter portions uneven in the area of the perforations to create spaces between a wrapper and its overlying uniting band which maximize the ventilation air flow to the filter portion.

4,331,166
CIGARETTE

Robert W. Hale, Bon Air, Va., assignor to Philip Morris, Incorporated, New York, N.Y.

Filed May 2, 1980, Ser. No. 146,534
Int. Cl.³ A24D 3/04
U.S. Cl. 131—331 8 Claims



1. A smoking article the improvement which comprises a disc approximately 3 to 4 mm in diameter at the exit of said smoking article which forces smoke leaving said smoking article into a divergent pattern.

4,331,167
COMPOSITIONS AND METHODS FOR PERMANENT WAVING OF HAIR

Theodor Wajaroff, Darmstadt, Fed. Rep. of Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 120,075
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905257
Int. Cl.³ A45D 7/00; A61K 7/09
U.S. Cl. 132—7 17 Claims

1. A composition for application to hair before the hair is wound up on curlers and treated for the permanent waving thereof comprising:

(a) a methylpolysiloxane having a boiling point in the range of 100° to 190° C. selected from the group consisting of hexamethyldisiloxane, octamethyltrisiloxane and decamethyltetrasiloxane, and/or a liquid paraffin and/or liquid isoparaffin having a boiling point in the range of 100°–190° C.,

(b) a cation active, non-capillary active compound, and

(c) 0.02 to 3.0 weight % of an ampholytic capillary active imidazoline compound.

17. A method for the permanent waving of hair comprising directly before use forming the composition of claim 1 by shaking together the components a, b and c in a closed container so that there is formed a more or less easily broken emulsion, applying about 15 to 25 g of the resulting emulsion onto washed and towel dried hair, combing the hair with said emulsion applied thereof, dividing the hair into strands, rolling the strands onto rollers, treating the hair with a permanent waving solution and after it has assumed the desired wave, removing the rollers.

4,331,168
VANITY CASE

Yoshiharu Hatakeyama, Tokyo, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,430
Claims priority, application Japan, Aug. 6, 1980, 55-110656[U]
Int. Cl.³ A45D 40/00
U.S. Cl. 132—79 G 5 Claims

1. A vanity case comprising:

a receptable member molded of synthetic resin material for containing a cosmetic material;

a cover member molded of synthetic resin material;

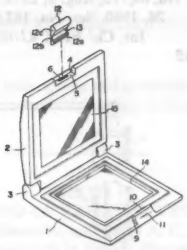
said receptable and cover members being hinged together at respective rear ends thereof;

said cover member having formed therein a cavity extending rearwardly from a front end of said cover member;

a first latching protrusion integrally molded with said receptable member;

a second latching protrusion integrally molded with said cover member;

said first and second latching protrusions being engaged with each other by snap action when said receptable member is closed by said cover member, thereby maintaining said cover member in a closed position with respect to said receptacle member; and

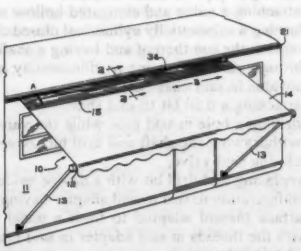


a slider element having an inner end portion and an outer end portion, said inner end portion being slidably received in said cavity, said outer end portion being positioned closely adjacent the front end of said receptacle member in said closed position of said cover member, said slider element having an outer end surface aligned with a front surface of said cover member when said cover member is in said closed position, and said outer end portion of said slider element including means for, upon inward movement of said slider element, forcing said receptable member away from said cover member and releasing engagement between said first and second latching protrusions, thereby moving said cover member to an open position.

4,331,169
AWNING AND METHOD OF MAKING SAME

John R. Bonser, Parkersburg, W. Va., assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 22, 1980, Ser. No. 152,443
Int. Cl.³ E04F 10/06
U.S. Cl. 135—5 AT 4 Claims



1. An awning particularly suited for use with recreational vehicles which comprises a main awning portion having an inboard edge portion and a cover portion attached to said main awning portion along the inboard edge of said main awning portion which serves as a cover for said main awning portion when said main awning portion is rolled upon itself for storage, said cover portion being comprised of two layers of flexible

thermoplastic material and a scrim fabric layer interposed between said two layers of flexible thermoplastic material, said scrim layer having no more than five percent dimensional change in width or length when heated from 0° C. to 70° C., said two layers of flexible thermoplastic material being bonded together with said scrim layer disposed therebetween to form a trilaminate structure, said cover portion having flanges which form a bifurcated outboard edge, the said inboard edge of said main awning portion being secured between said flanges of said cover portion.

4,331,170

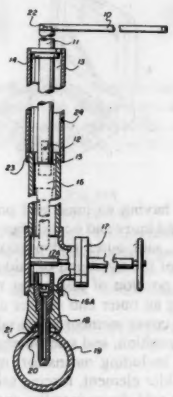
HOT TAP APPARATUS AND METHOD

David E. Wendell, 118 Warwick Dr., #58, Benicia, Calif. 94510

Division of Ser. No. 64,772, Aug. 8, 1979. This application Aug. 28, 1980, Ser. No. 182,013

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—15 **4 Claims**



1. A method for making a hot tap to a pipe or other member being in use and carrying high pressure materials therethrough comprising:

(1) welding an adapter comprising a body having a generally cylindrical shape and a conduit therethrough along the central axis of said body, said body having internal threads located in a tapered section of said conduit, intermediate the ends of said body and distal therefrom for forming a metal to metal bond with a device seated therein and having means for attachment to a valve at one end of said body and being bevelled externally at the other end for welding to pipe or other member,

(2) attaching a valve and elongated hollow member thereto forming a substantially cylindrical closed chamber having a seal at the top thereof and having a shaft located therethrough, said shaft being rectilinearnally and rotationally movable in said chamber,

(3) attaching a drill bit to said shaft,

(4) drilling a hole in said pipe while the valve is open,

(5) withdrawing the shaft and drill bit above said valve,

(6) closing said valve,

(7) replacing said drill bit with a device having of a size and configuration to seat in said adapter having threads on the surface thereof adapted to form a metal to metal bond with the threads in said adapter in said tapered section,

(8) opening the valve,

(9) lowering the shaft and device to place said device in said adapter and rotating said shaft to seat said device in said adapter wherein when said device, having an elongated configuration, an upper portion, an intermediate portion having threads thereon and a lower portion, is seated in said adapter, the intermediate portion is engaged with the threads of the tapered section, said upper portion generally extends beyond said adapter toward said valve and the lower portion generally extends beyond said adapter toward said hole in said pipe,

(10) withdrawing shaft to disconnect it from said device.

4,331,171

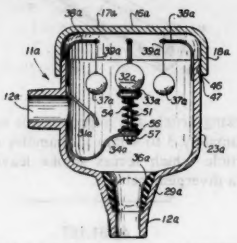
EARTHQUAKE SHUT-OFF VALVE FOR GAS LINE

Sam Novi, 1686 Great Highway 4,, San Francisco, Calif. 94116

Filed May 15, 1981, Ser. No. 228,100

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—45 **13 Claims**



1. In a valve of the type operable to shut off fluid flow following earthquake tremors comprising a casing having a fluid inlet port and a fluid outlet port at the bottom of said casing, a first ball, a pedestal supported in said casing normally supporting said first ball above said outlet port, said first ball being dimensioned to close off said outlet port when dislodged from said pedestal, the improvement which comprises at least one second ball, means mounting said second ball within said casing for movement initiated by tremors in a path to dislodge said first ball from said pedestal.

4,331,172

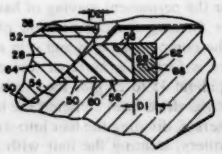
FIRE-SAFE VALVE STRUCTURE

John A. D'Angelo, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,285

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—72 **12 Claims**



1. A fire-safe valve structure comprising:

a valve body having a flow passage therethrough and a valve chamber, a valve member mounted within said valve chamber for movement between open and closed positions relative to said flow passage, an annular metallic seat about said flow passage having an annular groove facing said adjacent valve member, a sealing ring mounted in said annular groove for contacting said adjacent valve member in sealing relation to provide a face seal and spaced from the bottom of the groove to define an annular space therein behind said sealing ring to permit displacement of said sealing ring into said annular space; and

a body of sublimable material positioned within said space, upon reaching a predetermined temperature said body of sublimable material sublimates into a gas and said gas

passes between said sealing ring and said annular groove so as to vacate said annular space so that said sealing ring may be displaced into said space and thereby allow said valve member to move into contact with said adjacent metallic seat to provide a tight metal-to-metal seal between said valve member and said adjacent metallic seat.

4,331,173
HYDRAULIC SYSTEM FOR FEEDING AN ACTION TURBINE

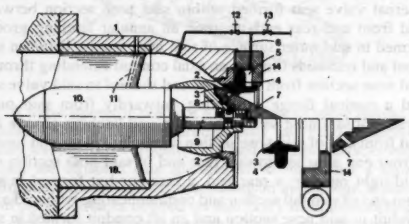
Andre Culaud, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Mar. 11, 1980, Ser. No. 129,386

Claims priority, application Switzerland, Mar. 29, 1979, 2898/79

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—219 **5 Claims**



1. A hydraulic system for feeding an action turbine comprising a rectilinear gate and an injector mounted in series at the end of a conduit through which water is supplied to the turbine, an outer body member in which said gate and injector are mounted, said gate including shut-off means mounted in said body member, said shut-off means including a gate seat and a support in said body member, a needle valve mounted on the end of said support, a needle valve seat adjacent said gate seat, said support disposed upstream of said needle valve, and pressure controlled hydraulic means for displacing said support, said needle valve and said needle valve seat in an axial direction to close said gate when said support bears against said gate seat.

4,331,174
INLINE DISPERSAL VALVE

Lloyd H. King, Sr., Hopkins, Minn., assignor to Durance, Inc., Excelsior, Minn.

Continuation-in-part of Ser. No. 958,167, Nov. 6, 1978, Pat. No. 4,249,562. This application Apr. 28, 1980, Ser. No. 144,765

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ B01F *1/00*

U.S. Cl. 137—268 **6 Claims**

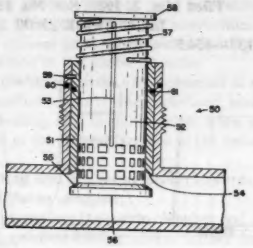
1. An inline dispersal valve for controllably releasing material into a fluid line comprising:

a housing having a means for attachment to a pressurized fluid line, said housing having an opening therein operable for fluid coupling with fluid in a fluid line;

a sleeve located in said housing said sleeve having an opening therein;

a porous container slideably mounted in the opening in said sleeve;

means for controllably raising or lowering said container into the pressurized fluid line to allow fluid to flow through said container to thereby dissolve soluble solid in said container and transport said dissolved material into the fluid line; and



resilient means for maintaining said container in contact with said means for controllably raising or lowering said container.

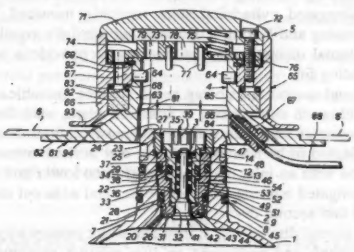
4,331,175
MOUNTING OF PRESSURE VESSELS

Arthur L. Brake, Winscombe, and David A. C. Harper, Bristol, both of England, assignors to Bristol Aerojet Limited, Avon, England

Continuation of Ser. No. 963,731, Nov. 27, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,067

Int. Cl.³ F16L *37/24*

U.S. Cl. 137—322 **3 Claims**



1. A combination comprising:

a valve, said valve comprising a valve seat and a valve closure member cooperating with said valve seat;

a pressure vessel for pneumatic fluids at pressures above 200 kilograms per square centimeter and a stationary mounting therefor; said pressure vessel having a neck containing said valve; and said mounting having a socket to receive said neck;

locking means for retaining said neck in said socket; and

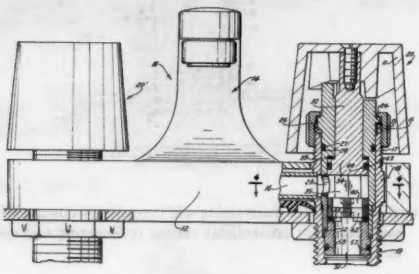
means for controlling said valve, said valve control means comprising a valve operating element movable in directions which are axial of said neck when the vessel is locked in said mounting to operate said valve; a screw thread coupling said valve operating element to a second element so that relative rotation between said valve operating element and said second element produces axial movement of said valve operating element; and a coupling between said valve operating element and a third element which transmits rotational but not translational movement, and an operative connection between said valve operating element and said valve closure member; whereby rotation of said third element produces axial movement of said valve operating element to move said valve closure member away from said valve seat.

4,331,176

REPLACEABLE CARTRIDGE VALVE ASSEMBLY

Richard G. Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,938
Int. Cl.³ F16K 25/00
U.S. Cl. 137—454.5 14 Claims



1. A replaceable valve assembly in the form of a cartridge adapted for insertion into a valve body of a sanitary fitting used for the control of water therethrough, said cartridge comprising:

a cylindrical housing having an axial bore therethrough, said housing having open upper and lower ends, and a water discharge opening formed between the ends thereof;

an elongated cylindrical stem rotatably mounted in said housing and having a diameter substantially equal to the internal diameter of said housing to provide a rotating sliding fit;

first and second discs being in face-to-face movable contact with each other along a common plane, said first disc having at least one water passageway therethrough and adapted to be positioned at one end in fluid communication with an inlet opening in said open lower end of said elongated housing and at the other end adjacent said face of said second disc;

said second disc having at least one water passageway therethrough and positioned so that relative movement between said discs will direct said at least one passageway therein between a blocked, shut-off position with the passageways being out of alignment and the partially, and completely overlapped positions where water can flow through said discs;

said discs being mounted in the housing and one of said discs being connected to one end of said stem for rotation therewith;

said water discharge opening of said housing having a cross-sectional area substantially equal to the cross-sectional area of said at least one passageway of said first and second discs to provide a water conduit for fluid communication between said water inlet opening and said water discharge openings in said housing;

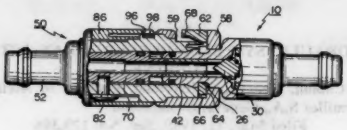
said stem and said housing cooperating to form an auxiliary valve means for throttling water flow downstream from said water discharge opening in said housing to said at least one passageway formed in said discs which together operate in a patterned, equal ratio relationship to control the volume of water flow through said valve housing simultaneously with the volume of water flow through said at least one disc passageway to provide a stepdown in pressure drop and thereby inhibit cavitation and/or other objectionable noises associated with the operation of said valve.

4,331,177

PIPE COUPLING

Reichi Makishima, Yokohama, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,265
Claims priority, application Japan, May 4, 1979, 54/55388
Int. Cl.³ F16K 37/00; F16L 37/28
U.S. Cl. 137—556 16 Claims



1. A pipe coupling, comprising a plug and a socket releaseably attached to said plug, said plug including a tubular nose section having a front end, a rear end, an outer surface, an internal valve seat formed within said nose section between said front and rear ends thereof, an annular latching groove formed in said outer surface of said nose section between said front and rear ends thereof, an axial conduit extending through said nose section from said front end thereof to said valve seat and a conical flange projecting outwardly from said outer surface of said nose section between said latching groove and said front end of said nose section, a tubular tail section having a front end attached to said rear end of said nose section in a fluid-tight manner, a rear end, a fore conduit formed in said front end of said tail section and communicating with said axial conduit in said nose section and an aft conduit formed in said rear end of said tail section and communicating with said fore conduit formed in said front end of said tail section and a valve having a main body moveably received in said fore conduit of said tail section, a tubular extension attached to said main body and slideably received in said axial conduit of said nose section, at least one radial opening formed in said extension adjacent to said main body, an axial opening formed in said extension and communicating at one end with said at least one radial opening and at an opposite end with said axial conduit of said nose section and urging means for urging said main body from a first position in which said at least one radial opening communicates with said fore conduit of said tail section, whereby said axial and radial openings in said extension of said valve cooperate with said axial conduit in said nose section and said fore and aft conduits in said tail section to form a fluid flow path through said plug, towards a second position in which said main body engages said valve seat formed in said nose section, whereby said fluid flow path through said plug is closed, said socket including a tubular main member having a front end sized and shaped so as to releasably receive said front end of said nose section of said plug, a rear end, an internal projection extending axially within said main member, an axial conduit extending between said projection and said rear end of said main member and communicating with said axial opening in said extension of said valve of said tail section of said plug and a substantially flat resilient tongue projecting outwardly from said front end of said main member, a tubular mantle member positioned over said front end of said main member so as to form an annular space between said mantle member and said front end of said main member and having a radial opening in alignment with said tongue of said main member, and a latching member having a ring section positioned in said annular space for radial movement between a first position in which said annular ring engages said latching groove of said nose section of said plug, whereby said plug and said socket are coupled together, and a second position in which said annular ring disengages said latching groove of said nose section of said plug, whereby said plug and said socket may be uncoupled, and a tongue section positioned in said radial opening of said mantle member and supported by said tongue of said main member such that said ring section assumes its first position

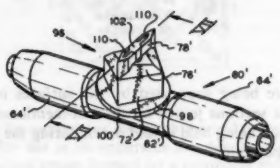
when said tongue of said main member is in an unflexed state and such that said ring section assumes its second position when said tongue of said main member is flexed as a result of the manual depression of said tongue section of said latching member of socket.

4,331,178

CURB BOX FOR PLASTIC VALVE

Edward W. Handley, Jackson, Mich., and Robert C. Stewart, Worthington, Ohio, assignors to Handley Industries, Inc., Jackson, Mich.

Filed Nov. 6, 1980, Ser. No. 204,461
Int. Cl.³ F16K *5/00, 31/00, 37/00*
U.S. Cl. 137—556.3 **6 Claims**



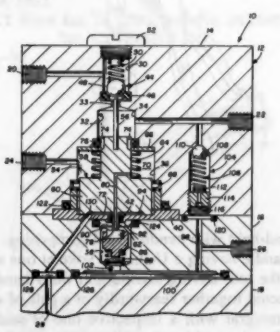
1. A valve operator head for a subterranean valve having an upwardly disposed valve operating shaft, said head comprising a body having four vertically disposed flat side surfaces intersecting the adjacent side surfaces at 90° to define a square configuration, each side surface having an upper edge, a plurality of upper surfaces defined on said body each intersecting a side upper edge through the length of the intersected edge, said upper surfaces each being inclined upwardly from the intersected side upper edge, and a vertically extending elongated projection defined on said body extending upwardly from said upper surfaces and diagonally oriented on said body with respect to the square plan configuration thereof.

4,331,179

REGULATOR/VALVE CONTROLLER

Tommy L. Gray, Dallas, Tex., assignor to Span Instruments, Inc., Plano, Tex.

Filed Nov. 5, 1980, Ser. No. 204,338
Int. Cl.³ G05D *16/10*
U.S. Cl. 137—627.5 **12 Claims**



1. A valve comprising:

a valve body having a valve chamber, a piston chamber and a regulator chamber therein, said valve body further defining an inlet port communicating with the valve chamber, an outlet port, an exhaust port and control port communicating with the piston chamber and a reset port communicating with the regulator chamber;

an activating piston positioned within the piston chamber and moveable therein between first and second positions between ends of the piston chamber, said activating piston defining a first surface thereon for exposure to a pressurized fluid for urging said activating piston into the second position in the piston chamber, said activating piston further having grooves therein for interconnecting the outlet and the exhaust ports when said activating piston is in the first position in the piston chamber;

a bi-stable valve positioned in the valve chamber to interconnect the inlet and outlet ports when activated, said activating piston activating said bi-stable valve when said activating piston is in the second position in the piston chamber;

a first spring biasing said activating piston towards the first position in the piston chamber;

an annulus interconnecting the piston chamber and the regulator chamber, said activating piston further having an extension tube thereon cooperating with said annulus to restrict flow of a pressurized fluid into the piston chamber from the regulator chamber to act on the first surface of said activating piston, the pressurized fluid entering the regulator chamber through the reset port;

a regulator piston positioned within the regulator chamber and moveable therein between first and second positions between ends of the regulator chamber, said regulator piston defining a seal surface thereon for sealing engagement with an exposed end of the extension tube;

said activating piston further defining a pressure relief passage therein extending from the exposed end of the extension tube to interconnect with the exhaust port, the seal surface further engageable with said valve body in sealing engagement to prevent flow of pressurized fluid between the regulator chamber and the piston chamber when said regulator piston is in the second position in the regulator chamber to limit the pressure of the pressurized fluid acting on the first surface;

a second spring biasing said regulator piston towards the second position in the regulator chamber; and

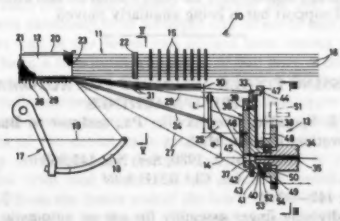
said activating piston being urged toward the second position in the piston chamber to activate said bi-stable valve when the fluid flow into the piston chamber acting on the first surface exceeds the flow out of the piston chamber through the control port.

4,331,180

APPARATUS FOR PRODUCING A WOVEN SLIDE FASTENER STRINGER

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,293
Claims priority, application Japan, Jul. 4, 1979, 54-84657
Int. Cl.³ D03D *41/00*
U.S. Cl. 139—35 **6 Claims**



1. An apparatus for manufacturing a slide fastener stringer including a woven stringer tape and a coiled coupling element woven into the stringer tape along a longitudinal edge thereof, said apparatus comprising:

(a) means for weaving the stringer tape of warp and weft

threads, said means including harnesses for binding warp threads extending adjacent to said warp threads;

(b) a mandrel for extending at an angle to the warp threads;

(c) a stationary shaft;

(d) a rotor rotatably mounted on said stationary shaft in eccentric relation and having an axial guide hole for passage therethrough of a monofilament for being wound around said mandrel in an orbital path to form the coiled coupling element, for being then woven into the stringer tape by the weft thread, said rotor having an axial pin;

(e) an arm rotatably mounted on said shaft and having a radial slot in which said axial pin is slidably received;

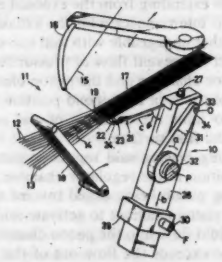
(f) a drive gear rotatably mounted on said shaft and drivingly connected to said arm, whereby said guide hole is rotatable about the axis of said rotor at a varying angular velocity in response to rotation of said drive gear to allow said harnesses to move across said orbital path without interference with the monofilament being wound.

4,331,181

SELVAGE-KNITTING NEEDLE MECHANISM FOR USE IN A SHUTTLELESS LOOM

Ryuichi Murasaki, Tateyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 176,014
Claims priority, application Japan, Aug. 28, 1979, 54-109327
Int. Cl.³ D03D *47/42*
U.S. Cl. 139—431 **7 Claims**



1. A selvage-knitting needle mechanism for use in a shuttleless loom, comprising:

(a) a support bar;

(b) a selvage-knitting needle attached at an angle to said support bar, said support bar and said needle having their axes crossing at an intersection;

(c) rocker means for angularly moving said support bar to enable said intersection to substantially follow an arc of a circle; and

(d) pivot means for allowing said support bar to move longitudinally substantially through a point on said circle while said support bar is being angularly moved.

4,331,182

DRESSING FINGER ASSEMBLY FOR AUTOMATIC WIRING MACHINES

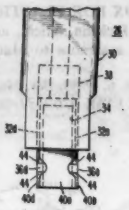
George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1980, Ser. No. 145,965
Int. Cl.³ B21F *3/04*
U.S. Cl. 140—93 R **7 Claims**

1. A dressing finger assembly for use on automatic wiring machines to provide a predetermined pattern in a wire being connected to a terminal, comprising:

a dressing finger having a portion of its exterior surface formed of at least first and second parallel spaced-apart planar sections and a third planar section oriented at right angles thereto, the extremities of said third section being joined respectively to first extremities of said first and second sections by a respective first pair of arcuate corner sections, said dressing finger further having a longitudinally disposed terminal-receiving aperture;

a notch formed in at least one of said corner sections at a predetermined distance from the extremity of said dressing finger;



said wire being supported by the surfaces of the pair of planar sections joined by the last-mentioned corner section and being held in said notch during the pattern-forming operation.

4,331,183

WIRE BENDING TOOL

Thorval Calhoun, 4532 Eureka St., Las Vegas, Nev. 89103

Filed Feb. 11, 1980, Ser. No. 120,622
Int. Cl.³ B21F *1/00*; B21D *7/02*
U.S. Cl. 140—106 **10 Claims**

1. A hand-held wire bending tool comprising:

a first handle having a U-shaped yoke at one end thereof;

a plier-like tool having second and third handles pivotally connected together rearwardly of a pair of wire gripping jaws integral with a respective one of said second and third handles and having at least one set of wire gripping grooves extending crosswise of the inner faces thereof; and

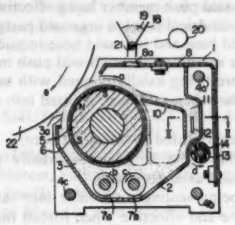
shaft means extending loosely through each of said jaws between said grooves and said pivot connection of said handles with the ends thereof mounted in a respective one of the legs of said U-shaped yoke whereby said first handle is operable to bend a wire gripped in said grooves through an angle of 90° C.

4,331,184

DEVELOPER QUALITY MONITORING DEVICE

Isamu Terashima, and Masayoshi Sunada, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,634
Claims priority, application Japan, Mar. 14, 1979, 54/28708
Int. Cl.[3] B65B 3/26; G01G 15/00
U.S. Cl. 141—94 12 Claims



1. A device for monitoring deterioration and toner density of a developer for use in an apparatus for developing with the developer a latent image formed on a recording medium, said device comprising:

(A) a developer chamber for containing the developer including toners and carriers;

(B) means for conveying the developer to a surface of said recording medium at which the latent image is formed;

(C) a detector chamber;

(D) means for causing said developer to pass through said detector chamber;

(E) a first monitoring means for monitoring density of toners of the developer passing through said detector chamber; and

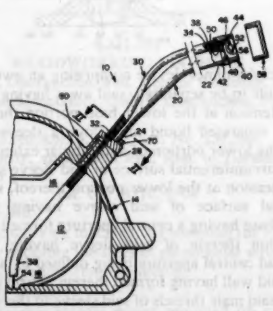
(F) a second monitoring means responsive to said first monitoring means for monitoring deterioration of the developer.

4,331,185

TRANSMISSION FILLER ASSEMBLY

James D. Rinaldo, Joliet, Ill., and Robert M. Vize, Bettendorf, Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00882, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO82/00277, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 14, 1980, Ser. No. 262,069
Int. Cl.[3] B65B 3/04
U.S. Cl. 141—95 7 Claims



1. An assembly (10) for adding liquid to a closed interior chamber (12) defined by a case (14), the chamber (12) having top (16) and bottom (18) portions, comprising:

a filler tube structure (20) having input (22) and exit (24) portions, the exit portion (24) being in communication with the top portion (16) and the input portion (22) being generally above the exit portion (24);

a dip stick tube structure (30) having an interior passage (32) and having upper (36) and lower (38) end portions, the upper end portion (36) being positioned adjacent and generally parallel to the input portion (22);

a tubular fitting (40) having first (42) and second (44) end portions, the first end portion (42) being circumferentially sealed to the upper end portion (36) and to the input portion (22); and

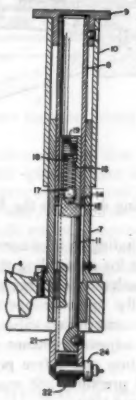
a cap (58) removably attachable in a sealed covering relationship with the second end portion (44).

4,331,186

SAFETY PUSH ROD ASSEMBLIES

Charles V. Wilhere, Pittsburgh, Pa., assignor to Horix Manufacturing Company, McKees Rocks, Pa.

Filed Dec. 5, 1980, Ser. No. 213,604
Int. Cl.[3] B65B 3/04
U.S. Cl. 141—98 3 Claims



1. Safety push rod assemblies for a container filling machine provided with a circular bonnet rotatable continuously on a vertical axis beneath a filling tank, each of said assemblies comprising a vertical sleeve adapted to extend through the marginal portion of the bonnet and be rigidly mounted therein, a tubular upper rod slidably mounted in said sleeve and extending above it, a container rest mounted on top of the sleeve, a lower rod slidably mounted in said upper rod and extending down below said sleeve, a lower rod being provided with a transverse passage therethrough inside the upper rod, a detent ball in each end of said passage, the lower rod also having an axial bore extending from its upper end down to said passage, a center ball in the lower end of said bore resting on both detent balls, a stop in the upper end of said bore, a coil spring compressed between said stop and center ball for urging said detent balls into engagement with the encircling upper rod, the upper rod having depressions in its inner surface receiving the portions of the detent balls projecting from said passage to thereby normally hold the push rod assembly in extended positions with said container rest spaced a predetermined distance from the lower end of the lower rod, a cam follower roller carried by the lower end of the lower rod for raising both rods to elevate a container on said rest into filling position, the upper rod being movable downwardly around the lower rod to collapse said assembly if the load on said rest creates a downward force that overcomes the resistance of the detent balls to being forced toward each other against the resistance of said coil spring, and a pull down roller carried by the lower end of the lower rod for pulling that rod down-

wardly in the upper rod until said coil spring forces the detent balls out into said depressions again.

4,331,187

LIQUID DISPENSING DEVICE

Lars E. Trygg, Villa Solvik 310, S-770 13 Grangärde, Sweden

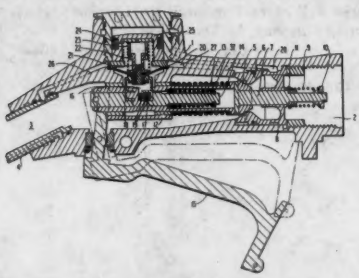
PCT No. PCT/SE79/00017, § 371 Date Sep. 24, 1979, § 102(e) Date Sep. 24, 1979, PCT Pub. No. WO79/00542, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 22, 1979, Ser. No. 171,232

Claims priority, application Sweden, Jan. 24, 1978, 7800884

Int. Cl.³ B65B *3/28, 57/14*

U.S. Cl. 141—218 **9 Claims**



1. A liquid dispensing device in the form of a pistol valve, comprising:

a valve housing including an inlet connected to a pump, and an outlet; a valve for controlling the flow of liquid from the inlet to the outlet; a discharge pipe connected to said outlet; a manually operable operating mechanism for controlling movement of said valve, said operating mechanism including adjustable means movable between an engagement position and a free position in dependence upon inlet liquid pressure; and means for equalizing an overpressure at said inlet:

(a) when the pump is deactivated when the valve is open, or,

(b) if an attempt is made to open the valve when the pump is deactivated and said pressure is sufficient to move said adjustable means.

4,331,188

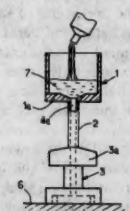
APPARATUS FOR TRANSFERRING A PASTY MATTER FOR FILLING A HOLLOW BODY

Marc Reynaud, 29 B Agutte Semhat, 38000 Grenoble, France

Filed Dec. 19, 1979, Ser. No. 105,158

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—311 R **6 Claims**



1. Apparatus for transferring pasty matter without leaving a substantial amount of pasty material remaining in the apparatus comprising:

a cylindrical bowl having an open top and a base closing a bottom of said bowl;

a hollow tube axially joined to said base having a bore therein opening axially into said bottom;

a push member;

a head on said push member, said head being sealingly and slideably fittable through said open top into said cylindrical bowl;

said head on said push member being effective when pushed into said cylindrical bowl to urge said pasty matter therein toward said base and into said bore in said hollow tube;

an axial bore extending through said push member;

said axial bore being axially aligned with said bore in said hollow tube when said head is fitted into said cylindrical bowl;

a piston slideably fitted in said axial bore;

said piston having a length substantially greater than a length of said axial bore; and

said piston being sealingly slideable into said bore in said hollow tube and effective when forced thereinto to urge said pasty matter substantially completely through said hollow tube without leaving a substantial amount of said pasty material in said bore.

4,331,189

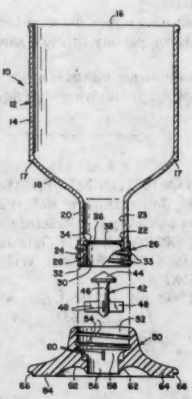
STOCK/SAUCE SKIMMER

Auvin H. Joyner, 43-39 39th Pl., Apt. 43, Sunnyside, N.Y. 11104

Filed Oct. 10, 1980, Ser. No. 195,800

Int. Cl.³ B67C *11/00*

U.S. Cl. 141—343 **4 Claims**



1. A stock/skimmer device comprising an ewer in which is stored liquids to be separated, said ewer having an elongated tubular extension at the lower base portion thereof through which the separated liquid may flow; a sleeve fixedly connected to the lower portion of said tubular extension such that the outer circumferential surface of said sleeve surrounds said tubular extension at the lower portion thereof, said outer circumferential surface of said sleeve having male threads thereon; a base having a central aperture formed therethrough for reception therein of said sleeve having male threads thereon, said central aperture being defined by a circumferential wall, said wall having formed therein female threads which mate with said male threads of said sleeve to thereby adjust the relative position of said sleeve and said tubular extension with respect to said base by relative rotation thereof; and a valve means positioned in said central aperture and in said sleeve; said sleeve having a central opening formed on the top surface thereof for the flow of liquids therethrough, said top surface being situated within said tubular extension; and said base comprises means for fixedly supporting said valve means

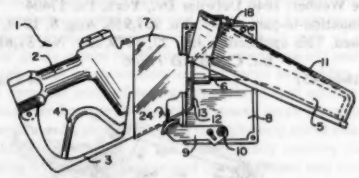
therein such that said valve means is stationary with respect to said base; said valve means having a stopper which fits snugly in said central opening of said top surface of said sleeve when said sleeve is rotated to its downwardmost position in said base, and said stopper is spaced from said central opening in a desired and controlled relationship when said sleeve is rotated to an open position spaced from its downward most position in said base, whereby the separated liquid may be removed from said ewer at a controlled and varying rate, said separated liquid flowing through said tubular extension and through said central aperture of said base.

4,331,190

HOOK AND SHUT-OFF BRACKET FOR AUTOMATIC FUEL NOZZLE

Grenville G. Sutcliffe, Villa Ridge; Ronald F. Bradley, St. Clair, and Paul D. Mercer, Sullivan, all of Mo., assignors to Ausley Corporation, Pacific, Mo.

Filed Mar. 19, 1980, Ser. No. 131,768
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—392 **5 Claims**



1. A bracket for use in conjunction with an automatic fuel nozzle and its supporting holster and for assuring that the associated pump is shut off as the nozzle is hooked into the holster as during nonusage, comprising, said bracket having a central base portion for securing onto the spout portion of the nozzle, said bracket including an aperture provided through its central base portion, with the spout of said nozzle being inserted through said aperture, said bracket having an integral upper extending portion for use in supportingly hooking onto the holster during that period of nonuse, said bracket having an integral lower portion that forms a guide for assuring automatically that the pump is shut-off as when the nozzle is inserted into its supporting holster, means provided upon the lower end of said bracket for rigidly fastening the same to the nozzle, whereby said bracket is stably secured at two locations in its attachment to the fuel nozzle.

4,331,191

WOODWORKING MACHINE

Kurt Buttner, Oberkochen, Fed. Rep. of Germany, assignor to Okoma Maschinenfabrik GmbH, Oberkochen, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,399
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914355
Int. Cl.³ B27C *9/04*
U.S. Cl. 144—3 R **3 Claims**

1. In a woodworking machine, for tenoning the ends and for longitudinally profiling the sides of rectangular wooden workpieces such as window frames, having:

(i) a support structure

(ii) first rotatable spindle means mounted on said support structure and having cutter means thereon for tenoning,

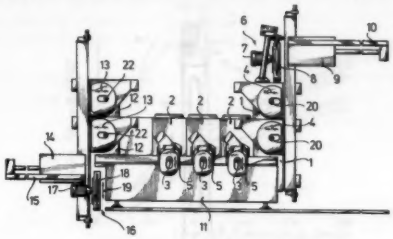
(iii) a first workpiece-supporting table movable relative to the support structure past said first spindle means in a first direction such that said cutter means forms tenoning along a first end of the workpiece,

(iv) second rotatable spindle means mounted on said support structure and having cutter means thereon for longitudinal profiling,

(v) a second workpiece-supporting table fixed stationarily on said support structure and on which said workpiece can be slidingly moved past said second spindle means in a second direction at right angles to said first direction for longitudinal profiling of a side of said workpiece,

(vi) third rotatable spindle means mounted on said support structure and having cutter means for tenoning, and

(vii) a third work-piece supporting table movable relative to the support structure past said third spindle means in the reverse of said first direction such that said third spindle



cutter means forms tenoning along a second end of the workpiece,

the improvement which consists in that, in combination:

(a) said first rotatable spindle means comprises at least two first spindles the axes of rotation of which are disposed in a row parallel to said first direction,

(b) said second spindle means comprises at least two second spindles the axes of rotation of which are disposed in a row parallel to said second direction, and

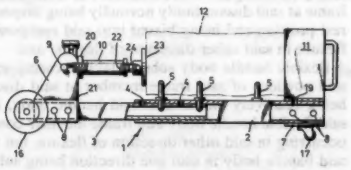
(c) said third spindle means comprises at least two third spindles the axes of rotation of which are arranged in a row parallel to said first direction.

4,331,192

HORIZONTAL HYDRAULIC WOOD SPLITTER

Michael Hung, 6th Fl., No. 65, Nanking E. Rd., Sec. 3, Taipei, Taiwan

Filed Oct. 31, 1979, Ser. No. 89,964
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **5 Claims**



1. A mechanism for splitting wood by the power of a jack unit, which comprises:

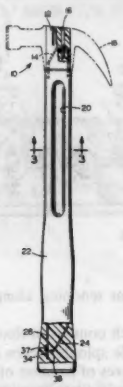
a bed composed of two pipes comprising a smaller pipe and a larger pipe, said smaller pipe socketed into said larger pipe for length adjustment, said two pipes provided with holes and including fixing pins selectively insertable within said holes to adjust the length of said bed, upper ends of said fixing pins defining wood receiving means and being bent outwardly to prevent the wood disposed thereon from sliding away;

a pump block having a jack, bolts for removably connecting said pump block with an end of said smaller pipe in a selected fixed position;

an axe block, bolts for removably connecting said axe block with an end of said larger pipe and an axe on said axe

block for splitting wood whereby extension of said jack forces the wood against said axe.

4,331,193
FLEXIBLE HANDLE FOR PERCUSSIVE TOOL EMPLOYING IMPROVED SHAFT MEMBER
Vincent J. Tudisco, Westwood, N.J., assignor to White Development Corporation, Bennington, Vt.
Filed Jun. 9, 1980, Ser. No. 157,649
Int. Cl.³ B25C *1/00*
U.S. Cl. 145—29 R **19 Claims**



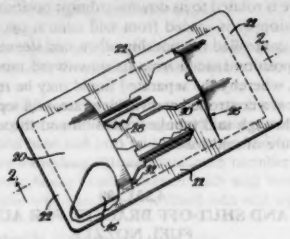
1. An impact tool handle comprising:

a. an elongated frame member of resiliently deflectable material defining a substantially closed figure in a plane defined by the longitudinal axis of the handle and the direction of the impacts to be transmitted by the associated impact tool head to be affixed to one end of the handle, said frame member being discontinuous at one point along one longitudinal side thereof, the portions of said frame member at said discontinuity being closely spaced in the rest position of said frame member and abutting in one direction of flexure of said frame member in the plane defined by the closed figure to substantially limit flexure in that direction and being movable relative to each other in the other direction of flexure thereof in said plane to permit such flexure, said portions of said frame at said discontinuity normally being disposed in said rest position and being biased into said rest position after flexure in said other direction of flexure; and

b. a flexible handle body substantially encasing said frame, said portions of said frame member at said discontinuity being relatively movable in said handle body, flexure of said flexible handle body and frame member concurrently occurring in said other direction of flexure, but flexure of said handle body in said one direction being substantially limited by said frame member.

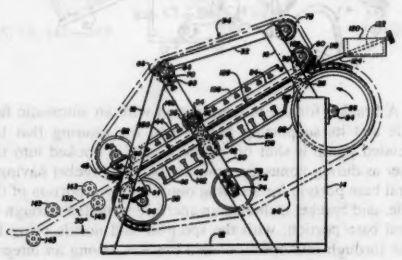
4,331,194
KEY HOLDER
Richard J. Lederer, 3496 Regent Dr., Palatine, Ill. 60067
Filed Sep. 18, 1980, Ser. No. 188,333
Int. Cl.³ A45C *11/42*
U.S. Cl. 150—40 **4 Claims**

1. A portable card holder for keys and the like comprising a laminated assembly of two plies of thermoplastic film sealed together at their marginal edges, one ply of film having a pair of spaced apart transverse slits therein, and a flat card-like insert having a main body and spaced apart end portions on one face of said main body sandwiched between said two plies of thermoplastic film, said end portions being contiguous to said ply of film having said slits therein, the free edges of said end portions being aligned respectively with said slits, thereby forming two opposing end pockets accommodating insertion



of keys through said slits into said end pockets for secure, but removable retention of the keys by said laminated assembly.

4,331,195
CONTINUOUS CASTING MACHINE
C. Eugene Webber, 1040 Detwiler Dr., York, Pa. 17404
Continuation-in-part of Ser. No. 931,956, Aug. 8, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 51,611
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—431 **14 Claims**



1. A machine for continuously casting bar products of nonferrous metals comprising in combination, a frame having inlet and discharge means at opposite ends, a lower endless flexible mold assembly including a plurality of similar mold blocks each having a mold channel in one face carried by endless chain means and the ends of said blocks directly abutting each other to form a continuous molding channel when moving along a straight path, first substantially straight guide means supported by said frame and engageable by said blocks for support and direction of movement, said guide means extending forwardly and downwardly from said inlet end of said frame to guide a straight span of said mold assembly in molding position, an upper endless flexible mold assembly including a plurality of similar mold blocks of different length from the blocks of said lower mold assembly and each having a mold channel in one face thereof, second substantially straight guide means above said first guide means and parallel thereto and operate to support and guide a straight span of said mold blocks of said upper mold assembly in abutting overlying relationship with the blocks of said lower mold assembly, the blocks of said lower mold assembly being at least twice as long as the blocks of said upper mold assembly, thereby to dispose the abutting ends of the mold blocks in said two mold assemblies respectively out of registry with each other to prevent heat dams from occurring, the cooperating mold channels of the two mold assemblies forming a continuous elongated mold cavity of predetermined geometrical cross-sectional shape, means continuously to introduce molten metal into said cavity adjacent the inlet end of said frame and form the same into a

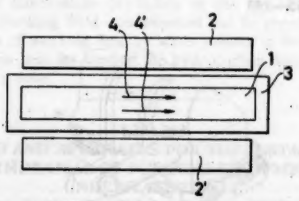
continuous cast rod, means including rotatable guide wheels above and below said first and second guide means and at least adjacent the inlet and discharge ends of said guide means respectively to support the portions of said endless flexible mold assemblies opposite and at the ends of said straight spans thereof for continuous movement, the guide wheel adjacent the inlet end of the frame for the lower mold assembly being of substantially larger diameter than the corresponding guide wheel for the upper mold assembly, and drive means operable to push said straight span of said lower assembly of larger mold blocks along said first guide means to maintain the ends of the mold blocks thereon in firm abutment with each other, means to index said lower and upper mold assemblies to maintain the abutting ends of the mold blocks of said two assemblies out of registry with each other as aforesaid and thereby minimize the occurrence of heat sinks and hot shorts in the continuous cast rod, additional straight guide means extending longitudinally outward from the inner end of said first mentioned guide means toward the discharge end of said frame, said aforementioned guide means comprising elongated straight guide rails slidably engaged by said mold blocks, means supporting the guide rails of said first mentioned guide means stationarily relative to said frame, means supporting one end of the guide rails of the additional guide means for limited pivotal movement relative to said inner end of said first guide means, means supporting the opposite ends of the guide rails of said additional guide means for limited movement toward and from the straight path of movement of said mold assemblies, whereby said opposite ends of said guide rails of said additional guide means may be moved limited distances away from each other to separate the mold blocks of the opposing mold assemblies to facilitate the cooling of the continuously moving cast rod in passing from the discharge end of said frame, and spray means mounted longitudinally above and below the spans of said endless mold assemblies moving along said stationary and movable straight guide means to facilitate the solidifying of the continuous cast rod.

4,331,196

PROCESS FOR PRODUCING NON-DIRECTIONAL ELECTRICAL STEEL SHEETS FREE FROM RIDGING

Itsuro Ohashi; Masafumi Okamoto, and Hiromu Fujii, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,277
Claims priority, application Japan, Jul. 27, 1976, 51/89346
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—468 **6 Claims**



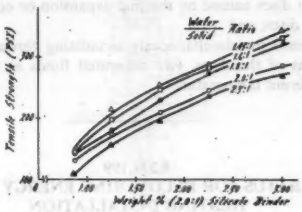
1. In a process for producing a non-directional electrical steel sheet substantially free from ridging, which comprises forming a molten steel into slabs by continuous casting, hot rolling the slab, cold rolling the hot rolled product into a final thickness by a single step, and subjecting the cold rolled product to decarburization annealing, said molten steel consisting essentially of not more than 0.02% C., 1.5 to 4.0% Si, not more than 1.0% Al, with the balance being Fe and unavoidable impurities, the improvement which comprises electromagnetically stirring the unsolidified steel during the continuous casting in a zone where the molten steel is at a temperature which is not higher than the liquidus temperature so as to cause at least 50% of the central zone of the slab to transit into an equi-axed structure, and rough rolling the steel slab at a temperature range of 900° to 1100° C. with a reduction rate so as to obtain not more than 50% of a recrystallized structure.

4,331,197

MICROWAVE CORE PROCESS

Gerald S. Cole, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 2, 1979, Ser. No. 54,215
Int. Cl.³ B22C *1/18*
U.S. Cl. 164—522 **12 Claims**



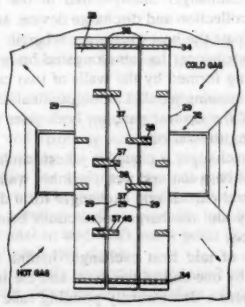
7. A method of making a sand core useful in casting metal;
(a) mixing essentially silica sand, water and less than 1% of a water soluble inorganic binder resin having a water/-solid ratio of 1.45–2.5:1, said binder resin consisting of sodium silicate, potassium silicate or a mixture thereof;
(b) blowing said mixture into a core box having a predetermined cavity configuration, said core box being constituted of a material transparent to microwave energy except for a predetermined uniform distribution of glass or ceramic fibers effective to provide a predetermined degree of lossiness to microwave energy passing therethrough; and
(c) exposing said core box containing said mixture to microwave energy effective to dehydrate said core and provide a core strength of at least 250 psi.

4,331,198

ROTARY HEAT EXCHANGER

Tamara M. Michalska, and Robert M. Stahl, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 10, 1979, Ser. No. 101,454
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—9 **8 Claims**



1. A rotary heat exchanger, comprising:
(a) a plurality of coaxially aligned discs mounted in spaced relation along a common center axis around which the

discs rotate, the discs each being integral and unsegmented and having passages through which fluid can flow in a direction generally parallel to the center axis;

(b) means coacting with the discs for sealingly dividing the space between each pair of adjacent discs into a plurality of generally pie-shaped areas which are sealed from each other such that fluid in one area cannot pass into an adjacent area, the means including, (I) a plurality of pairs of radially oriented and aligned channels in confronting faces of each pair of adjacent discs, and (II) sealing means extending across and into each pair of said pairs of radially oriented channels to seal the spaces between the channels while allowing limited relative movement between adjacent discs caused by thermal expansion or contraction of the discs; and

(c) means for simultaneously circulating through different areas of the discs, two separated fluids at substantially different temperatures.

4,331,199

APPARATUS FOR RECOVERING ENERGY FROM A HEATING INSTALLATION

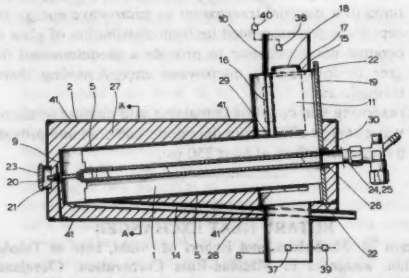
Jozef J. E. Dehue, Roermond, Netherlands, assignor to B.V. Interpower, Roermond, Netherlands

Filed Aug. 8, 1980, Ser. No. 176,526

Claims priority, application Netherlands, Aug. 9, 1979, 7906088

Int. Cl.³ F28F *27/00*

U.S. Cl. 165—39 **19 Claims**



1. An apparatus for recovering energy from the flue gas of a fired heating installation which uses a liquid circuit to transfer heat comprising supply and discharge connections for the flue gas, a heat exchanger incorporated in the liquid circuit, a condensate collection and discharge device, and a fan to force the flue gas past the heat exchanger wherein

said heat exchanger has an elongated body with its central part being formed by the walls of two cavities or sets of cavities running parallel in longitudinal direction and said walls of the central part, on both sides of said cavities, have longitudinal ribs,

said heat exchanger is placed in a heat insulating box so that the areas between said ribs, the inner wall of said box and the central part of said exchanger form ducts,

said supply and discharge connections being connected to said ducts,

said ducts of said heat exchanger incline toward a space formed by one end of the ducts and the inner wall of the box, where a downwardly pointing tube is in open connection with said space and the exterior of said box, and

means for controlling the flow of flue gas positioned in the flue gas line, and means to pass the liquid of the liquid circuit through said cavities.

4,331,200

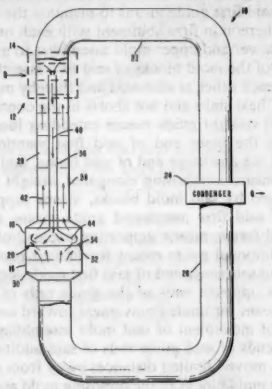
PASSIVE FLOW MIXING FOR OSMOTICALLY PUMPED HEAT PIPES

Algerd Basiulis, Redondo Beach, and Charles P. Minning, South Pasadena, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 106,984

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.22 **10 Claims**



1. In an osmotically pumped heat pipe having solution and solvent reservoirs and solvent permeable membrane material separating said reservoirs, the improvement in maintaining a high concentration gradient across said membrane material comprising means for passively inducing directed convection currents across the membrane material on its solution reservoir side.

4,331,201

CLAMPED CONNECTION

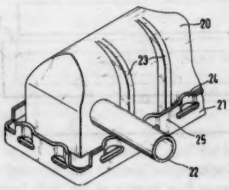
Wolfgang Hesse, Remseck, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,839

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852408

Int. Cl.³ F28F *9/12, 9/14*

U.S. Cl. 165—153 **4 Claims**



1. A clamped connection for clamping a water box to a bottom plate which is adapted to support a bundle of tubes for a heat exchanger, the connection comprising:

(a) a flange on said water box, said flange being continuous and uninterrupted along a plane parallel to its length, said flange having a substantially constant cross section in a plane perpendicular to its length;

(b) an edge on said bottom plate and an edge region on said bottom plate adjacent said edge, said edge region being deformable from a first condition in which said edge region is continuous and straight or has a constant radius

of curvature along most of its length and a second condition in which said edge region has a continuously corrugated configuration including alternately deformed and undeformed partial edge region areas, said edge region including a plurality of elongated apertures spaced from said edge and extending generally parallel to said edge, said apertures being present in said edge region when said edge region is in its first undeformed condition as well as when it is in its second deformed condition, said deformed partial edge region areas being bounded on the side opposite to said edge by said apertures and said undeformed partial edge region areas being located between said apertures;

(c) said flange and edge region having an unclamped condition in which said deformable edge region is in its first condition and a clamped condition in which said deformable edge is in its second condition;

(d) said deformed partial edge region areas positively and lockingly engaging said flange when said flange and edge region are in the locked condition to form a positive joint;

(e) said edge including means for stiffening the clamping connection in the clamped condition, said stiffening means comprising said undeformed partial areas, and

(f) an elastic packing member positioned between said water box and bottom plate.

4,331,202

METHOD FOR RECOVERY OF HYDROCARBON MATERIAL FROM HYDROCARBON MATERIAL-BEARING FORMATIONS

Alexander I. Kalina, 12439 Millbanks, Houston, Tex. 77031

Continuation-in-part of Ser. No. 161,577, Jun. 20, 1980, abandoned. This application Sep. 9, 1980, Ser. No. 185,415

Int. Cl.³ E21B *43/24, 43/30, 43/40*

U.S. Cl. 166—245 **43 Claims**

1. A method of heating a hydrocarbon material contained in a recovery zone in an underground hydrocarbon material-bearing formation to reduce the vicinity of the hydrocarbon material for facilitating recovery thereof from the recovery zone, which comprises:

(a) feeding a gaseous penetration medium comprising a gaseous working fluid and a carrier gas, into the formation at a penetration pressure sufficient for penetration of the recovery zone, the working fluid being a water soluble gas which generates heat of solution upon absorption in an aqueous medium; and

(b) controlling the partial pressure of the working fluid in the penetration medium in relation to the penetration pressure and the temperature prevailing in the recovery zone to inhibit working fluid condensation but to provide for absorption of working fluid by water present in the formation to release heat for heating the hydrocarbon material in the recovery zone.

4,331,203

METHOD AND APPARATUS FOR THE INSTALLATION AND WITHDRAWAL OF PUMPING EQUIPMENT IN AN UNDERWATER WELL

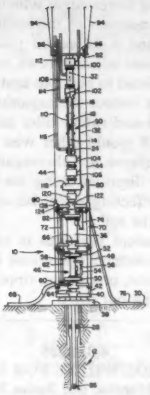
Karl Kiefer, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 25, 1980, Ser. No. 190,751

Int. Cl.³ E21B *23/00, 33/064, 33/068*

U.S. Cl. 166—339 **15 Claims**

1. Container apparatus for use in the installation and withdrawal of suspended pump equipment with respect to an underwater well, comprising an elongate casing having an upper end and a lower end, a first annular blowout preventer adjacent the upper end of the casing, a second annular blowout preventer adjacent the lower end of the casing, a third annular blowout preventer between said first and second preventers, said first, second and third preventers dividing said casing into upper and lower chambers adapted to communicate via said third preventer, said lower chamber being adapted to accommodate the pumping equipment, means for circulating liquid through the lower chamber, means for supplying liquid under



pressure to the upper chamber, means for opening and closing each of said preventers selectively and means for connecting the lower end of the casing to underwater wellhead apparatus.

4,331,204

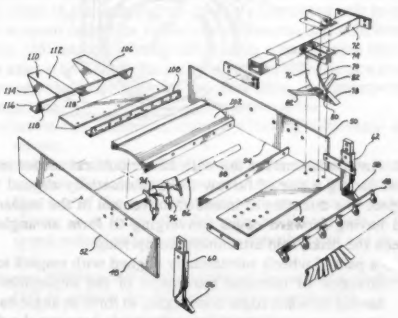
TILLAGE IMPLEMENT

Robert E. White, 632 W. Commerce Ave., Gilbert, Ariz. 85234

Filed Mar. 21, 1980, Ser. No. 132,377

Int. Cl.³ A01B *33/02, 33/12, 49/02, 49/06*

U.S. Cl. 172—70 **15 Claims**



1. A dust free tillage implement for preparing soil ready for planting in one pass across a field, said implement comprising in combination:

(a) a framework attachable to a draught vehicle;

(b) a plurality of spaced apart rippers suspended from said framework and spanning across the path of said implement for fracturing the ground;

(c) a rotary tiller for mulching the soil and discharging it airborne toward the rear of said implement, said tiller including a rotating shaft, a plurality of shanks spaced along and radial to said shaft and a point disposed at the extremity of each said shank;

(d) means for rotatably supporting said shaft at an elevation proximate the elevation of the surface of the soil being tilled;

(e) motive means for providing power to rotate said shaft in the direction of travel;

(f) a row former disposed rearward of said rotary tiller for deflecting and directing the airborne soil into one of a

plurality of rows and for effecting a seal between the rear of said implement and the soil, said row former including a hood for defining each row, said hood including a pair of side plates having lower edges which slope upwardly and rearwardly downstream of the leading edge of the row being formed, and a deflection plate for defining each trough intermediate adjacent rows, each of said deflection plates being oriented to build up upstream a mound of soil for buffering the impact thereagainst of the airborne soil discharged from said rotary tiller and avoiding the abrasive effect which would other wise be presented by the impact of the airborne soil thereagainst; and

(g) shroud means disposed along the lateral sides of said implement for effecting a seal between the sides of said implement and the soil;

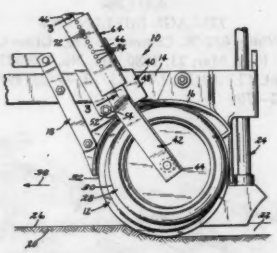
whereby, said implement performs in one pass the conventional separately performed operations of mulching residue and growing vegetation, prediscing, ripping, plowing, discing, leveling and furrowing out rows.

4,331,205

DEPTH CONTROL WHEEL FOR SEED PLANTER

Robert S. Sorenson, Hansha, and James B. Sorenson, Madelia, both of Minn., assignors to Brown County Manufacturing, Inc., New Ulm, Minn.

Filed Dec. 19, 1980, Ser. No. 218,266
Int. Cl.³ A01C *5/06*
U.S. Cl. 172—538 **5 Claims**



1. An attachment for use with an agricultural seeder implement having a pair of furrow disks substantially aligned with respect to a direction of intended movement of the implement and having forward edges converging to form an angle between the disks, said attachment comprising:

(a) a pair of wheels substantially aligned with respect to the direction of intended movement of the implement and having forward edges converging to form an angle having an arcuate measure similar to the angle between the disks, each of said wheels having an inner face opposite one of the disks and an outer face directed outwardly;

(b) means for mounting said wheels as part of said attachment with said wheels straddling the disks, and for movement, independent of upward and downward movement, forwardly and rearwardly relative to the disks;

(c) a pair of struts, each having a first wheel attachment end by which one of said wheels is supported and a second opposite end, said struts straddling said pair of wheels with each passing adjacent said outer face of said wheel supported thereby;

(d) a carrying member having a pair of formed extrusions, each defining a generally vertically extending channel, through which channel one of said second ends of said struts slideably moves; and

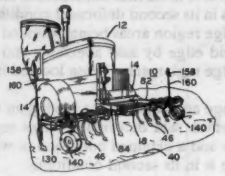
(e) means for locking each of said second ends of said struts against movement within said respective channel with one of a number of selectable stations along said second end disposed within said channel.

4,331,206

FRONT-MOUNTED LEVELING AND TILLAGE IMPLEMENT

Kenneth B. Linton, R.R. #1, Box 155, Van Wert, Ohio 45891

Filed Oct. 24, 1980, Ser. No. 200,444
Int. Cl.³ A01B *59/048*
U.S. Cl. 172—834 **14 Claims**



1. A ground leveling and tillage implement for attachment to the front of a tractor having ground-supported front and rear wheels, said implement comprising: an elongated frame element having opposite ends; means adapted to be removably attached to said tractor for supporting said frame element respectively adjacent said ends thereof in a position disposed transversely in front of said front wheels and in spaced, generally parallel relationship with the ground; a generally rectangular tine-supporting frame having spaced opposite sides and ends; a plurality of ground-working tines mounted on said supporting frame and depending therefrom; means for pivotally mounting said supporting frame intermediate its ends on said frame element for pivotal movement of said supporting frame about an axis parallel with said sides and with said frame element between an operative position extending forwardly of said frame element and generally parallel with the ground and with said tines in engagement therewith, and a generally upstanding transport position; said mounting means including means for selectively leveling said supporting frame in said operative position with respect to the ground; said supporting means including means for respectively selectively vertically adjusting said opposite ends of said frame element with respect to the ground thereby to adjust the depth of penetration of said tines; and power means for selectively moving said supporting frame between said positions thereof.

4,331,207

DEVICE FOR REVERSING THE DIRECTION OF FLOW OF A FLUID AT THE LEVEL OF A DRILL BIT

Yvon Castel, Pau, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 28, 1979, Ser. No. 70,388
Claims priority, application France, Aug. 28, 1978, 78 25111
Int. Cl.³ E21B *21/00*
U.S. Cl. 175—317 **7 Claims**

1. In a drilling device comprising a drill string, a drill bit having a central bore, and a source of pressurized fluid for feeding and irrigating the drill bit and flushing the bore hole, the improvement which comprises:

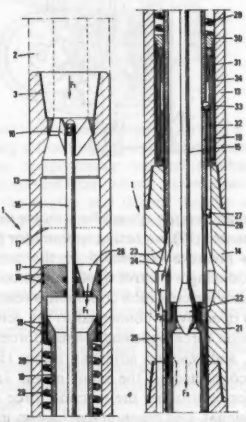
a distribution assembly for alternately effecting centripetal and centrifugal irrigation of the drill bit by the pressurized fluid, comprising:

a tubular body secured between the drill string and the drill bit, said tubular body having an axial bore communicating at one end with the source of pressurized fluid and at the other end with the central bore of the drill bit, a first duct in the wall of the tubular body and having an inlet opening into the upper portion of the axial bore thereof, and a second duct in the wall of the tubular body and having an inlet opening into the lower portion of the axial bore thereof and an outlet communicating with the exterior of the tubular body;

tubular distribution means axially slidably downwardly displaceable within said axial bore alternately between a

first and second position when acted upon by the flow of pressurized fluid, and axially upwardly slidably displaceable to a third rest position within the bore by resilient means when not acted upon by pressurized fluid resulting from an interruption of the flow of pressurized fluid, said tubular distribution means having a port in an upper portion of the wall thereof, said port being aligned with the inlet of said first duct in said first position, and the inlets of said first and second ducts being closed to fluid flow in said second position;

obturation means permanently disposed, with respect to said tubular body, said obturation means being a solid member located in said axial bore and adapted to controllably close a lower portion of said tubular distribution means below said port to the downward flow of pressurized fluid in response to a reciprocable sliding movement of said tubular distribution means in a first direction whereby said obturation means is in a respective first position, and to open said lower portion to fluid flow in response to a reciprocable sliding movement of said tubular distribution means in a second direction whereby said obturation means is in a respective second position; and



position control means cooperating with said tubular distribution means and actuated in response to axial displacement thereof, said position control means being adapted to direct the downward displacement of the tubular distribution means alternately to said first position or to said second position;

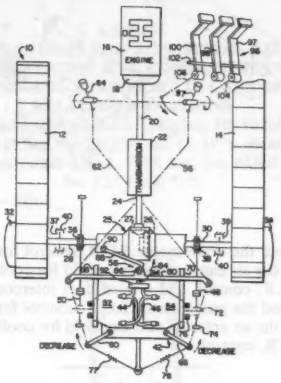
whereby successive interruptions and resumptions of pressurized fluid flow result in a cycle of alternating centripetal irrigation of the drill bit wherein fluid flows from the periphery of the drill bit into its central bore when said tubular distribution means is in said first position, at least a portion of the fluid flowing upwardly through the central bore of the drill bit being returned to the surface through said second duct, and centrifugal irrigation of the drill bit wherein fluid is caused to flow downwardly through its central bore toward its periphery when said tubular distribution means is caused to move from said first position to said third position and into said second position, with said obturation means closing said lower portion of said tubular distribution means by corresponding successive interruptions and resumptions of pressurized fluid flow, the fluid being returned to the surface along the outside of the drill bit and drill string.

4,331,208

HYDROMECHANICAL STEERING DIFFERENTIAL

C. Paul Kolthoff, Naperville; Joachim Horsch, Lombard, and John W. Gaines, Wheaton, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 129,160
Int. Cl.³ B62D *11/02*
U.S. Cl. 180—6.2 **21 Claims**



1. In a vehicle steered by driving having a pair of companion hydrostatic pump/motor units (52,54) provided with adjustable stroke to vary the displacement, and a pair of oppositely extending axles drivingly associated therewith, all disposed one each at each side of the vehicle, crossfeed interconnections (44,46) effective in vehicle turns to allow each of the units by unassisted energy interchange strictly therebetween to cause the other of the units and its drivingly associated axle to operate at speed reduction ratios relative thereto, and a differential drive (25) interconnecting the axles in a power path between the axles which is mechanically in parallel with the power path between the axles afforded by said units, the improvement comprising:

wherein said differential drive is a locking differential drive means;

actuator mechanism (58) pivotable to a position causing unequal displacement between companion units whereby that one of the units aforesaid with more stroke operates slower so as to run the drivingly associated axle at fixed speed reduction ratio relative to the other unit and its axle; and

means (90) responsive to pivoting of the actuator mechanism (58) to unlock the differential drive means (25).

4,331,209

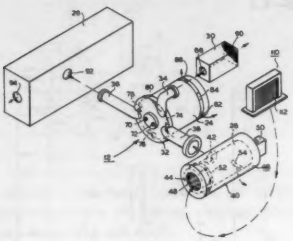
VENTILATION SYSTEM FOR ELECTRIC VEHICLES

James J. Bauer, Richland; William M. Wart, and Howard C. Hansen, both of Battle Creek, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 29, 1980, Ser. No. 125,963
Int. Cl.³ B60H *3/04*
U.S. Cl. 180—54 A **12 Claims**

1. A ventilation system in combination with an electric vehicle having a pump motor for driving a hydraulic pump to supply pressurized hydraulic fluid for hydraulic functions of the vehicle, a pump motor S.C.R. control, a drive motor for propulsion of the vehicle and a drive motor S.C.R. control, said ventilation system comprising an air intake means driven by the pump motor continuously during operation of the vehicle for supplying ambient air to said system, an air flow means interconnecting said intake means and the pump motor for providing a portion of the air supplied by said intake means for cooling the pump motor, a first duct connected to said intake

means for directing the flow of the remainder of the ambient air supplied by said intake means, a manifold connected to said first duct for receiving the air passing through said first duct, an air flow means interconnecting said manifold and the drive motor for supplying a portion of the air entering said manifold for cooling the drive motor, a second duct interconnecting said



manifold and the drive motor S.C.R. control for supplying a portion of the air entering said manifold for cooling the drive motor S.C.R. control, and a third duct interconnecting said manifold and the pump motor S.C.R. control for supplying a portion of the air entering said manifold for cooling the pump motor S.C.R. control.

4,331,210

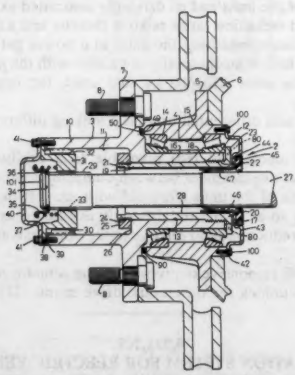
LIVE SPINDLE VEHICLE DRIVE WHEEL ASSEMBLY WITH AXIALLY MOVEABLE AXLE

Harry A. Petrak, Boulder, Colo., assignor to Tenneco, Inc., Deerfield, Ill.

Filed Apr. 24, 1980, Ser. No. 143,198

Int. Cl.³ B60K *17/00*; F16C *13/00*

U.S. Cl. 180—70 R **14 Claims**



1. In a vehicle wheel assembly having a live spindle mounted for rotation in a mounting member, said live spindle having a central aperture, the improvement comprising, in combination:

assembly maintenance means within said central aperture of said live spindle for maintaining said live spindle mounted in said mounting member, said assembly maintenance means having a central aperture;

a driveable axle within said central aperture of said assembly maintenance means, the peripheral surface of said axle being in an inwardly spaced relationship from a surface defining said central aperture; and

drive means connecting said live spindle to said driveable axle for causing said spindle to rotate when said driveable axle rotates and for enabling said driveable axle axial movement with respect to said live spindle whereby when a drive train connected to said driveable axle changes in length due to a change in position of said wheel assembly with respect to said drive train said axial movement of said driveable axle with respect to said live spindle enables relief of stress imposed on said drive train.

4,331,211

HYDRAULIC STEERING SYSTEM WITH REACTION TO THE ACTUATOR

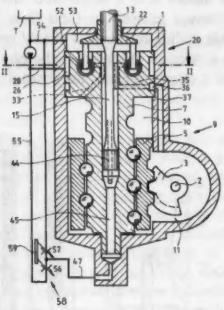
Armin Lang, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, A.G., Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,541

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851773

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—141 **2 Claims**



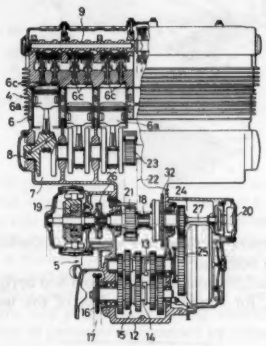
2. A hydraulic steering system for a motor vehicle, including a steering actuator (**97**), a steering servomotor (**9**), a source (**28**) of operating pressure connected to the servomotor, input means for producing a control signal influenced by at least one steering and driving condition condition, a reaction mechanism (**19, 19′, 123**) operatively connected to the actuator for developing a reaction force opposing manual forces transmitted to the actuator, and reaction adjusting means (**58, 58′, 58″, 99**) operatively connected to the input means and the reaction mechanism for controlling the reaction force as a function of said control signal, said reaction mechanism including at least one adjustable control device operatively connected to the actuator for displacement to a steering position, and two reaction pistons (**49, 49′**) at least one of which exerts the reaction force on the control device in said steering position, said reaction force varying between zero and a value proportional to the operating pressure in the steering servomotor in response to a controllable pressure (P_R) acting on one of the reaction pistons, said control device including a valve piston (**19, 19′**) in driving connection with the actuator, the two reaction pistons being exposed to differential pressure which equals the difference between the operating pressure effective in the steering servomotor and the controllable reaction pressure, the reaction pistons having operating surfaces exposed to fluid in reaction chambers (**40, 40′**) and a reaction line (**47**) connecting said reaction adjusting means to the reaction chambers for adjustment of the reaction pressure, the reaction adjusting means including a pressure responsive piston (**72**) having a stepped diameter portion (**74**), a housing within which the piston is displaceable, and a valve spring (**93**) enclosed by the housing within a spring chamber (**91**), said stepped diameter portion of the piston having operating surfaces (**76, 78**) operating chambers applying pressure to said surfaces opposing the bias of said valve spring, and a control valve (**83, 84**) connecting the operating chambers to the high pressure line or the return line, the reaction line being connected to the spring chamber.

4,331,212

MOTORIZED TWO-WHEELED VEHICLE

Masaharu Tsuboi, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP78/00003, § 371 Date Jun. 11, 1979, § 102(e) Date Jun. 11, 1979, PCT Pub. No. WO79/00243, PCT Pub. Date May 3, 1979
PCT Filed Oct. 2, 1978, Ser. No. 101,110
Claims priority, application Japan, Oct. 25, 1977, 52-143214; Oct. 29, 1977, 52-129232
Int. Cl.³ B60K 5/04; B62M 9/00
U.S. Cl. 180—230 4 Claims



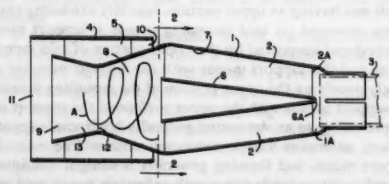
1. A motorized two-wheeled vehicle having a vehicle body frame comprising a front wheel and a rear wheel, a multiple-cylinder, in-line reciprocating internal combustion engine positioned adjacent said front wheel, a transmission positioned rearwardly of the engine and driven thereby and which is connected to drive said rear wheel, a laterally extending intermediate driving shaft interposed between a laterally extending crankshaft on the bottom portion of the engine and a laterally extending input shaft on the front portion of the transmission, a sprocket supported and driven by said crankshaft at a position substantially centrally between the ends thereof, a sprocket drivingly supported on an intermediate portion of said intermediate shaft, a chain drivingly connecting said crankshaft sprocket to said intermediate shaft sprocket, means for drivingly connecting said intermediate driving shaft to said transmission input shaft, and an A.C. generator and a control member for an ignition circuit disposed on opposite end portions of the intermediate driving shaft, the combined length of said intermediate shaft, said A.C. generator, and said control member being not greater than the length of said crankshaft.

4,331,213

AUTOMOBILE EXHAUST CONTROL SYSTEM

Yoshifumi Taniguchi, Toyonaka, Japan, assignor to Mitsuko Leith, Honolulu, Hi.

Filed Jan. 28, 1980, Ser. No. 116,194
Int. Cl.³ F01N 1/08, 1/14
U.S. Cl. 181—263 16 Claims



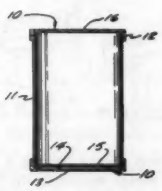
1. An exhaust gas control system comprising an exhaust gas guiding pipe having a proximal intake end for connection to an exhaust pipe, and having a portion which expands outwardly from the intake end, a spirallying series of guiding blades mounted in the outwardly expanding portion of the guiding pipe about an outwardly expanding core so exhaust gas entering the intake end from the exhaust pipe is guided in swirls of increasing radius through the guiding pipe, the guiding pipe having a distal opening for releasing the swirling exhaust gas.

4,331,214

DEVICE TO REDUCE THE ACOUSTICAL RADIATION FROM EMPTY CANS AND CONTAINERS DURING HANDLING AND TRANSPORT IN CANNING AND RELATED OPERATIONS

Ronald A. Darby, 256 Kuulei Rd., Kailua, Hi. 96734

Continuation of Ser. No. 706,829, Jul. 19, 1976, abandoned. This application Aug. 1, 1979, Ser. No. 62,869
Int. Cl.³ F16F 7/00
U.S. Cl. 181—296 6 Claims



1. A method of reducing the acoustical radiation from empty containers with a cylindrical wall and one end closed by a metal surface while the containers are being handled and transported comprising the steps of:

a. providing a damping end-cap comprised of a viscoelastic material and of a configuration such that the end-cap fits over the end of the container and is secured to the container by elastic forces in the viscoelastic material; and

b. placing at least one said end-cap on the container by fitting a tip of the end-cap cover on end of the container and thereby forming an enclosed air cavity between a flat surface of the end-cap and a metal surface at a closed end of the container prior to entry of the container into a noise sensitive area; and abating noise by acoustically transferring vibratory energy in the metal surface at the closed end through the enclosed air cavity to the viscoelastic material in the end-cap; and

c. removing the said end-cap from the container after the container has passed through the noise sensitive area, or after the container no longer radiates excessive noise; and

d. transporting the removed end-cap so as to be available for use on another empty container which will enter the noise sensitive area.

4,331,215

CONTROLS FOR AERIAL LIFT PLATFORM APPARATUS

John L. Grove, Greencastle; Ernest J. Merz, Chambersburg, and Charles W. Walters, Waynesboro, all of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Feb. 12, 1980, Ser. No. 120,882
Int. Cl.³ B66F 11/04; G05G 1/00
U.S. Cl. 182—2 25 Claims

1. An aerial lift platform apparatus comprising a chassis, driving and steering means for supporting the chassis, an upper works, means supporting the upper works for rotational movement on the chassis, means for rotating the upper works, an extensible boom pivotally mounted at its inner end on the upper works, means for luffing the boom, means for extending

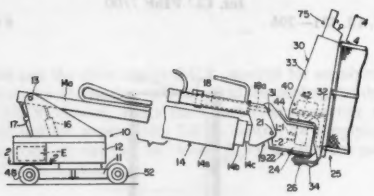
and retracting the boom, a workman's platform supported adjacent the free end of the boom, and control means comprising:

(a) a first group of control members accessible to a workman on the platform for controlling upper works movements and comprising:

(i) a swing control lever for controlling said upper works rotating means, means mounting said swing control lever for swinging movement of the free end thereof in substantially the same direction as the platform moves upon manipulation of said swing control lever,

(ii) a boom luffing control lever for controlling the boom luffing means, means mounting the boom luffing control lever for movement of the free end thereof in substantially the same direction as the platform moves upon manipulation of said boom luffing control lever,

(iii) a boom extension control member for controlling the



boom extension means having a hand engaging end portion, and means mounting the boom extension control member for movement of the said end portion away from the boom inner end to cause boom extension and toward the boom inner end to cause boom retraction, and

(b) a second group of control members for controlling the movement of the chassis and comprising:

(i) a drive control lever for controlling forward and reverse drive of the chassis, and means mounting said lever for movement of the free end thereof in substantially the same direction as the chassis upon manipulation of the drive control lever, and

(ii) a steering control lever for controlling the chassis steering means, means mounting said steering control lever for movement of the free end thereof in substantially the same direction as the chassis is steered upon manipulation of the steering control lever.

4,331,216

TREE CLIMBING STAND

Joseph A. Amacker, Tallulah, La., assignor to Amacker, Inc., Tallulah, La.

Continuation-in-part of Ser. No. 961,640, Nov. 17, 1978, which is a continuation-in-part of Ser. No. 873,285, Jan. 30, 1978, abandoned. This application Jan. 15, 1980, Ser. No. 112,185

Int. Cl.[3] **A47C** *9/10;* **A45F** *3/26;* **A01M** *31/02*

U.S. Cl. 182—135 **13 Claims**

1. An apparatus for climbing upright columnar members, comprising:

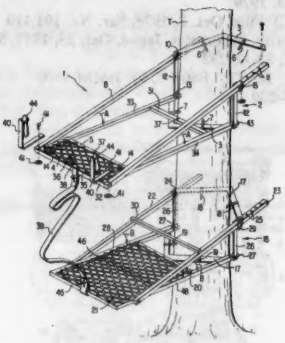
first climbing means for accommodating the body of a user, said first climbing means including first means for gripping the upright columnar member, first and second upper bar means for supporting the body of the user from the side, and third and fourth middle bar means for supporting the body of the user from the side;

a first platform means, spaced from said upright columnar member and movable along said third and fourth middle bar means, for supporting the body of the user in a sitting position;

first and second cross bar means for acting as end braces for the first platform means near to and far from, respectively, the upright columnar member;

rack means, attached to said first climbing means, for holding a gun or other weapon;

second climbing means for accommodating the feet of the user, said second climbing means including second means for gripping the upright columnar member, and first and



second lower bar means for supporting the feet of the user from the side; and

a second platform means, spaced from said upright columnar member, for supporting the feet of the user from the bottom.

4,331,217

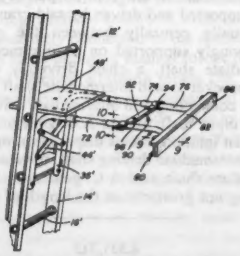
LADDER STEP AND STABILIZER

James P. Stecklow, Broadview Heights, Ohio, assignor to R.L.S. Enterprises, Inc., Broadview Heights, Ohio

Filed Apr. 16, 1980, Ser. No. 142,178

Int. Cl.[3] **E06C** *7/14, 7/48*

U.S. Cl. 182—214 **18 Claims**

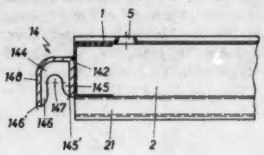


1. An attachment for a ladder having parallel longitudinally spaced rungs rigidly interconnecting a pair of longitudinal stiles for providing a generally horizontally disposed supporting surface when the ladder is placed in vertically inclined operative position, said attachment comprising mounting means engaging the ladder rungs at longitudinally spaced points and having an upper portion, laterally extending support means mounted on said mounting means a support member attached and supported by the upper portion of said mounting means and the support means with the support member completely overlying the upper portion of the mounting means and the support means with the upper surface of the support member providing an unobstructed generally horizontal supporting surface, extension means connected with a free end of the support means and forming generally a straight continuation thereof and terminating in a wall engaging means, and means swivelly connecting the wall engaging means with said extension means.

4,331,218
SCAFFOLD PLANK

Eberhard Layher, Blankenhornstrasse 17, D-7129 Güglingen-Eibensbach (Württemberg), Fed. Rep. of Germany

Continuation-in-part of Ser. No. 961,244, Nov. 16, 1978, abandoned. This application Mar. 19, 1980, Ser. No. 131,869
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754226; Apr. 26, 1979, 2916826
Int. Cl.³ E04G 5/08
U.S. Cl. 182—222 8 Claims



1. A scaffold plank, comprising a horizontal metal walkway having two end edges spaced from one another in a first direction, and two side edges spaced from one another in a second direction which is transverse to said first direction, said walkway having a plurality of regularly distributed perforations including some perforations bounded by upwardly extending collars and other perforations bounded by downwardly extending collars, said perforations having identical diameters, and the number of perforations bounded by upwardly extending collars exceeding the number of perforations bounded by downwardly extending collars; two side flange members each extending along a respective one of said side edges of said metal walkway in said first direction and formed by a side portion of the latter; two end profiled members each located beneath said metal walkway and extending along a respective one of said end edges over the entire width thereof in said second direction, each of said profiled members being formed as a four-cornered tubular member and connected with said metal walkway and with said side flange members; and means for suspending the plank, fixedly mounted on each of said end profiled members, said suspending means being arranged so that when two such scaffold planks are located laterally adjacent to one another, the suspending means of the respective end profiled members of the two scaffold planks laterally abut against one another over their entire length.

4,331,219
MECHANICAL SAFETY DEVICE FOR A LIFT

Yasunori Suzuki, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Japan

Filed May 12, 1980, Ser. No. 149,025
Claims priority, application Japan, May 14, 1979, 54-58985
Int. Cl.³ B60S 13/00
U.S. Cl. 187—8.5 4 Claims

1. A mechanical safety device for a lift which comprises a pillar means, supported by a base and a carriage means having arms for supporting a load, means to move the carriage means up and down the pillar including a chain, comprising:

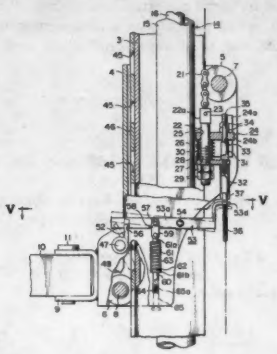
(a) a longitudinal slot plate having a row of slots formed in its longitudinal direction, which is mounted to the pillar means;

(b) a pawl pivotally mounted to the carriage, which is adapted to be pivoted into a latch position wherein it engages with one of the slots so as to prevent the carriage from falling down and an unlatch position wherein it does not engage with the slot, and spring means biasing the pawl normally into latch position by a spring;

(c) an action plate connected to the pawl so as to be pivoted together therewith;

(d) a lock lever pivotally mounted to the carriage, which is adapted to be pivoted into an engage position wherein it locks the action plate when the pawl is in the unlatch position and a disengage position wherein it unlocks the action plate when the pawl is in the latch position, and spring means normally biasing the lock lever into the engage position; and

(e) a push means which is movably mounted to the carriage means, and is coupled to one end of the chain, and which

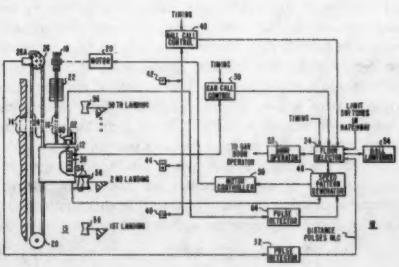


is adapted to push the lock lever so that the lock lever may be pivoted into the disengage position when the chain breaks, said device further comprising means removably positioned between said lock lever spring means and said base which functions to pivot the lock lever into the disengaged position when the carriage is lowered and said means engages the base.

4,331,220
ELEVATOR SYSTEM

Alan L. Husson, Hackettstown, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1980, Ser. No. 203,835
Int. Cl.³ B66B 1/30
U.S. Cl. 187—29 R 10 Claims



1. An elevator system, comprising:

a structure having a plurality of floors,

an elevator car mounted for movement in said structure to serve the floors,

motive means for causing said elevator car to make a run and stop at a target floor,

and control means for said motive means, including speed pattern means for providing a speed pattern indicative of the desired speed of the elevator car during at least a portion of a run,

said speed pattern means including means providing a running speed pattern which increases its rate of change when the elevator car is to decelerate and stop at a target floor, means providing a slowdown speed pattern, means pro-

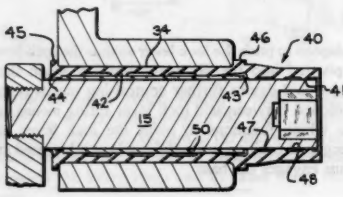
viding a deceleration signal indicative of the rate of change which the slowdown speed pattern should follow while it is controlling the speed of the elevator car, and transfer means responsive to the running speed pattern and to said deceleration signal, transferring speed control of said elevator car from said running speed pattern to said slowdown speed pattern, and terminating such control by the running speed pattern, when the rate of change of the running speed pattern has a predetermined relationship with the rate of change signified by said deceleration signal.

4,331,221

CALIPER DISC BRAKE GUIDE AND RETENTION MEANS

Anthony C. Evans, Westland, and Kurt H. Rinker, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Co., Romulus, Mich.

Filed Aug. 1, 1978, Ser. No. 928,472
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.44 **4 Claims**



1. In a disc brake having a caliper member slidably supported by a fixed support member and by at least one pin wherein said pin is secured to one of said members and protruding through a guide hole extending through the other member, a longitudinal sleeve at least partially encircling and in sliding contact with said pin, a resilient bushing positioned between the peripheral surface of said sleeve and the peripheral surface of the guide hole, said bushing having annular flange means at each end thereof for engagement with the guide hole outside edge thereby preventing axial movement of said bushing relative to said guide hole, the improvement wherein said bushing includes a longitudinal portion extending axially beyond at least one of said annular flanges, said longitudinal portion having a multiplicity of longitudinally disposed annular ribs defining annular recesses therebetween, said annular ribs each sealingly engaging said pin thereby acting to wipe clean said pin of any contamination thereupon during axial movement of said pin relative to said bushing entrapping and retaining said contamination within said annular recesses.

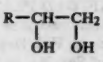
4,331,222

METHOD FOR REDUCING BRAKE NOISE IN OIL-IMMERSED DISC BRAKES

Thomas V. Liston, and Timothy R. Erdman, both of San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 7, 1980, Ser. No. 166,007
Int. Cl.³ F16D *65/02*; C10M *1/20*
U.S. Cl. 188—264 B **4 Claims**

1. A method for reducing oil-immersed disc brake chatter by lubricating the contacting surfaces of oil-immersed disc brakes with a composition comprising a major amount of a lubricant containing an effective amount to reduce chatter of an alkane-1,2-diol of the formula:



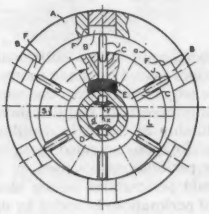
wherein R is alkyl containing from 8 to 28 carbon atoms or mixtures thereof.

4,331,223

ELECTROHYDRAULIC ROTARY BRAKE

Patrice Charlat, Mantes la Ville; Bernard Delmas, Clichy, and Jose Mallen-Herrero, Paris, all of France, assignors to Compagnie de Construction Mecanique Sulzer, France

Filed Apr. 16, 1980, Ser. No. 140,946
Claims priority, application France, Apr. 20, 1979, 79 09998
Int. Cl.³ F16D *57/02*
U.S. Cl. 188—294 **14 Claims**



1. An electromagnetically actuatable rotary brake comprising a rotor having an inner core fixed for rotation with a rotary shaft to be braked and with a nonmagnetic cylindrical insert disposed radially outwardly of said core, and an annular stator defining a cylindrical bore around said rotor for containing brake fluid, lateral flanges disposed beyond opposite ends of said rotor defining ends of said cylindrical bore and mounted in fluidtight relation on the rotary shaft, said rotor being arranged eccentrically inside said cylindrical bore for rotation therein, vanes of magnetizable material slidably mounted in radial recesses in said cylindrical insert between a normal retracted, non-braking position and a fully extended braking position, first magnetic field means provided on said rotor for normally attracting said vanes to their retracted position against the action of centrifugal force exerted on said vanes in rotation, and second magnetic field means provided on said stator for attracting said vanes to said braking position, a selected on of said first and second magnetic means comprising electromagnetic coil means whereby in response to a change in current supplied to said electromagnetic coil means said vanes in their normal position are displaced toward a desired position between said retracted position and said fully extended position.

4,331,224

HYDRAULIC SHOCK ABSORBER FOR VEHICLES

Shoichi Sano, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,524
Claims priority, application Japan, Mar. 22, 1979, 54-37332[U]
Int. Cl.³ F16F *57/00*
U.S. Cl. 188—322.22 **4 Claims**

1. In a hydraulic shock absorber for vehicles, comprising:
a cylinder including inner and outer cylinder members having a chamber defined therebetween;
a bottom check valve operably arranged at the lower end of said cylinder to provide communication between the interior of said inner cylinder member and said chamber;
a wheel mount barcket provided at a lower portion of said outer cylinder member for mounting on a wheel support member of a vehicle;

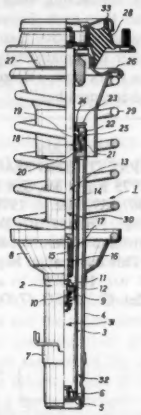
a piston slidably fitted in said cylinder, said piston including a check valve mechanism;

a piston rod supporting said piston, the upper end of said piston rod extending outside said cylinder; and

a chassis mount bracket provided at said upper end of said piston rod;

the improvement wherein:

said piston rod comprises upper and lower piston rod members integrally fixed to each other at respective connecting portions thereof;



said upper and lower piston rod members are isolated from contact with each other by a first elastic element disposed between said respective connecting portions of said upper and lower piston rod members;

a rod guide is provided at an upper end portion of said inner and outer cylinder member and has said piston rod slidably received therethrough; and

said rod guide includes radially inner and outer members integrally fixed to each other at respective connecting portions thereof and isolated from contact with each other by a second elastic element disposed between said respective connecting portions.

4,331,225

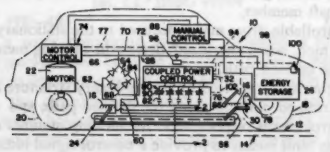
POWER CONTROL SYSTEM FOR ELECTRICALLY DRIVEN VEHICLE

John G. Bolger, 469 Tahos Rd. E, Orinda, Calif. 94563

Continuation-in-part of Ser. No. 899,786, Apr. 25, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,372

Int. Cl.³ B60L *9/00*

U.S. Cl. 191—10 **14 Claims**



1. A vehicle for use on a prepared road having associated therewith a power source including a magnetic circuit containing a ferrous metal core to create a magnetic field, the vehicle comprising:

a framework having a plurality of road engaging elements thereon;

an electric motor for driving at least one of said elements;

power receiving means on the vehicle containing a ferrous metal core for receiving magnetic flux from the power source in quantities proportional to the degree of magnetic coupling between said power source and the power receiving means to supply received power to said vehicle during travel along the road;

means for retaining the power receiving means in a fixed running position relative to the vehicle framework so that a relatively small air gap is established between the power receiving means and the power source;

a source of energy for supplying power to the electric motor when the power receiving means is not coupled to the power source;

circuit means electrically connecting the power receiving means, the source of energy and electric motor; and

electrical control means connected to the power receiving means and operative when the vehicle is traveling along a prepared road including means responsive to the voltage level of said power receiving means and also means responsive to the voltage level of said source of energy for maintaining substantially constant preselected voltage output from said power receiving means.

4,331,226

DEVICE FOR AUTOMATIC ACTUATION OF AN AUTOMOBILE CLUTCH

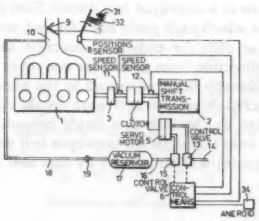
Paulus Heidemeyer, Wolfsburg; Frank Zimmermann, Braunschweig, and Romanus Scholz, Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,687

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2927175

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.076 **9 Claims**

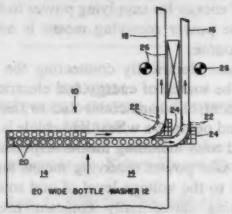


1. In apparatus for automatic actuation of an automobile clutch operatively located between an automobile engine and a manually shiftable transmission, of the kind that includes a servo motor responsive to auxiliary power applied thereto for effecting engagement and disengagement of the clutch, and control means for controlling the auxiliary power delivery to the servo motor as a function of the speed adjusting means or the clutch input and output rotational speeds or both, and wherein the control means controls the auxiliary power delivery to the servo motor during starting from stop (initial transmission input speed ≈0) so that the rotational speed of the engine attains a prescribed rotational speed which is a function of accelerator pedal position; the improvement comprising, in said control means, means operable in a range of speed adjusting means positions greater than idle for adjusting the auxiliary power to the servo motor to maintain values of engine speed, in a corresponding range of engine speeds greater than idling, at prescribed engine speeds below the maximum tractive power engine speed for each speed adjusting means position in the range, and means operative for speed adjusting means positions approaching maximum for increasing the rotational engine speed discretely to the rotational speed corresponding to maximum tractive power.

4,331,227
BOTTLE WASHER DISCHARGE SORTING ARRANGEMENT

Robert F. Risley, Wilton, Conn., assignor to PepsiCo Inc., Purchase, N.Y.

Continuation-in-part of Ser. No. 83,669, Oct. 11, 1979. This application Mar. 10, 1981, Ser. No. 242,414
Int. Cl.³ B65G 47/12
U.S. Cl. 198—339 7 Claims

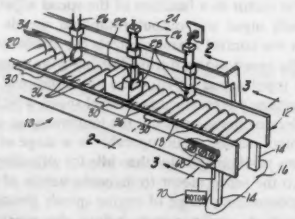


1. An arrangement for sorting a plurality of items into at least two single file columns, comprising:
a. means for conveying a plurality of items in a forward direction;
b. at least two conveyor belts arranged substantially parallel to each other, and substantially perpendicular to said conveying means with one conveyor belt being adjacent thereto, such that items advanced in the forward direction by said conveying means are deposited onto the conveyor belt adjacent to the conveying means;
c. a plurality of guides extending substantially in said forward direction across the top surface of said adjacent conveyor belt along a portion of the width of the conveying means to a conveyor belt distant from said conveying means at which each guide has a far end, said guides being curved at their far ends in a direction towards the upstream direction from which the conveyor belts are traveling, whereby items advanced to the plurality of guides are directed thereby to said more distant conveyor belt to be carried by that belt in a single column and items advanced onto said adjacent conveyor belt without encountering guides will be carried by that belt in a single file column.

4,331,228
ROLLER CONVEYOR SYSTEM

Lawrence A. Galarowic, Detroit, Mich., assignor to Visi-Trol Engineering Company, Detroit, Mich.

Filed May 5, 1980, Ser. No. 146,515
Int. Cl.³ B65G 43/00
U.S. Cl. 198—341 6 Claims

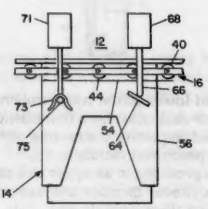


1. A conveyor system comprising:
an elongated frame;
a plurality of rollers rotatably mounted to said frame in a spaced and parallel relationship, said rollers defining an elongated conveyor track along which a series of workpieces are transported;
said track having a plurality of work stations at predetermined longitudinally spaced positions along said track;
means for continuously rotatably driving said rollers between said work stations;
each roller at each work station further comprising a drive member and a tubular driven member;
means for continuously rotatably driving said tubular drive members at said work stations; and
means for drivingly connecting each drive member to its driven member so that each driven member rotates in unison with its associated drive member while permitting said driven member to remain stationary when a workpiece is held at the work station despite continued rotation of its associated drive member.

4,331,229
MANUFACTURING MACHINE

Lawrence J. Kamm, 2775 Kurtz St., San Diego, Calif. 92110

Division of Ser. No. 967,059, Dec. 6, 1978, Pat. No. 4,295,555, which is a division of Ser. No. 752,107, Dec. 20, 1976, Pat. No. 4,137,432, which is a division of Ser. No. 468,260, May 10, 1974, Pat. No. 3,998,316. This application Sep. 17, 1980, Ser. No. 188,058
Int. Cl.³ B65G 47/00
U.S. Cl. 198—345 1 Claim



1. A manufacturing machine comprising at least one work station including at least one linear motion device and at least one rotary motion device, a conveyor system for transporting a workpiece to and from the work station, and positioning means for precisely positioning the workpiece relative to the work station, the linear motion device comprising:
a stationary structure including a spar member, a shaft member and means for supporting the spar member and shaft member in spaced, parallel relationship,
a moving member including means for securing thereto the element to be moved,
bearing means for attaching the moving member to the spar member and shaft member for sliding reciprocal movement along a defined path parallel to the spar member and shaft member,
controllable drive means secured to the stationary structure which, when energized, drives the moving member along the defined path,
limit means supported by the stationary structure at a predetermined position along the defined path, and
control means responsive to the moving member contacting the limit means to provide a control signal indicating that the moving member has contacted the limit means, the rotary motion device comprising:
a rotary cylinder including a housing and a rotor,
second controllable drive means which, when energized, drives the rotor of the rotary cylinder,
support means secured to the housing of the rotary cylinder,
an arm secured to the rotor of the rotary cylinder,
second limit means secured to the housing of the rotary cylinder at a predetermined position around the rotor in

the path traversed by the arm when the second drive means is energized,

second control means responsive to the arm contacting the second limit means to provide a control signal indicating that the arm has contacted the second limit means, and

means secured to the rotor to support the element to be moved, the conveyor system comprising:

a conveyor bed whose perimeter defines the closed loop of the conveyor system, a drive chain which extends around the perimeter of the conveyor bed and at least one carriage member which is driven around the perimeter of the carriage bed by the drive chain,

the conveyor bed comprising a plurality of alternately disposed straight and arcuate sections, each of the straight sections including a vertical surface and each of the arcuate sections including a rotatably mounted horizontal wheel,

the drive chain comprising a plurality of roller elements each having a vertical axis of rotation, the drive chain extending around the perimeter of the conveyor bed and being in engagement with the wheels of the conveyor bed, with the roller elements of the drive chain being in contact with the vertical surfaces of the conveyor bed, whereby when the drive chain is driven, the roller elements along the straight sections of the conveyor bed are driven in rotation about their axes by frictional engagement with the vertical surfaces and the roller elements along the arcuate sections of the conveyor bed are carried around the wheels, the outer surfaces of the roller elements thereby having a surface velocity equal to twice the velocity of the drive chain along the straight sections of the conveyor bed and equal to the velocity of the drive chain along the arcuate sections of the conveyor bed,

the carriage member comprising support means for supporting the carriage member from the conveyor bed and means for frictionally driving the carriage member by the roller elements of the drive chain, the carriage member thereby being driven at a higher velocity along the straight sections of the conveyor bed and at a lower velocity along the arcuate sections of the conveyor bed, the carriage member further including a platen for carrying a workpiece, the positioning means comprising:

means for removing the platen from the carriage means, and

alignment means supported by the work station for precisely positioning the platen relative to the work station.

4,331,230

WORK RACK FOR CONVEYING APPARATUS

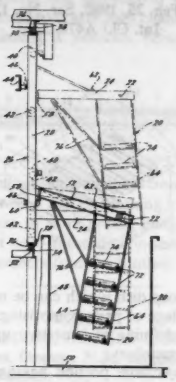
Edward Z. Buckley, West Bloomfield, Mich., assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Jun. 25, 1979, Ser. No. 51,537

Int. Cl.³ B65G 49/04

U.S. Cl. 198—484 **11 Claims**

1. In a work conveying machine including a supporting member transportable between a plurality of work stations and movable to and from a raised and a lowered position above the stations, the improvement comprising a work rack having pivotal work holders on said supporting member and transportable thereby, said rack including an elongated frame including spaced side members, a plurality of work holders extending transversely between said side members in vertically spaced relationship, each said work holder comprising a foraminous tray pivotally connected at opposite ends thereof to said side members at a position offset from the center of gravity thereof for normally urging the heavier side of each said tray in a direction toward a first position for supporting a work piece thereon, each said tray pivotal to a second position angularly pivoted from said first position for discharging a work piece therefrom, stops means on said frame for limiting pivoting movement of each said tray beyond said first position, and



coacting means at a work station for engaging and pivoting said work holders toward said second position.

4,331,231

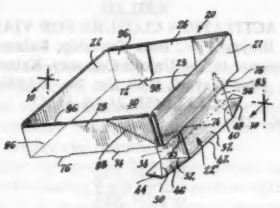
DISPLAY TRAY WITH TILT PLATFORM

Daniel J. Boyle, Hartland, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 22, 1980, Ser. No. 189,098

Int. Cl.³ B65D 5/52

U.S. Cl. 206—45.25 **8 Claims**



1. A display tray comprising:

a tray portion for supporting and displaying a plurality of articles including

a front, rear, and a pair of opposed side walls, connecting said front and rear walls,

each of said front, rear and side walls being foldably connected to a bottom wall for supporting said articles,

a platform for supporting said tray portion at an inclined angle relative to a horizontal support surface, said platform including

an upright standard panel hingedly coupled to the rear wall of said tray portion,

a base hingedly coupled to said upright standard, said upright standard and base forming an included acute angle therebetween, and

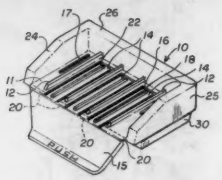
lateral support wings foldably connected to opposed edges of said upright standard extending inwardly beneath said bottom wall to support the same, each of said lateral support wings including a notch extending along the top edge thereof, and

a tongue extends downwardly from the juncture of said back wall and bottom wall received in each of said notches.

4,331,232
SOAP DISH

Mark E. Larkin, 419 Northgate, Lindenhurst, Ill. 60046

Filed Feb. 25, 1980, Ser. No. 124,063
Int. Cl.³ A47K 5/08
U.S. Cl. 206—77.1 10 Claims



1. A one-piece soap dish which can be molded and utilized without an assemblage of parts comprising:

a floor portion defining at least two upwardly extending stationary rib members;

at least one projectable portion having an upper surface integrally formed in said floor portion by means of slots integrally molded through said floor portion and adjacent said rib members;

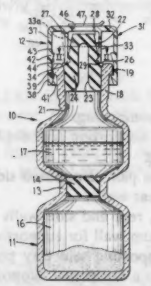
a tab portion integrally connected to said projectable portion, and

a hinge section integrally connecting said tab portion with said floor portion adjacent said stationary rib members, said upper surface of said projectable portion normally lying in a plane below said rib members so that when a downward force is exerted on said tab portion, an upward force will be transmitted to said projectable portion to contact said piece of soap and cause it to be lifted from said rib members and into a person's hand.

4,331,233
ACTIVATION CLOSURE FOR VIAL

George W. Braymer, Jr., Ross Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 30, 1980, Ser. No. 154,684
Int. Cl.³ B65D 25/08, 81/32
U.S. Cl. 206—221 11 Claims



1. In combination, a two-compartment mixing vial having a constriction disposed between the two compartments, a removable plug disposed within the constriction to provide a liquid-tight barrier between the two compartments, said vial having a neck at one end thereof for defining an opening therethrough in direct communication with one of said compartments, said opening having a cross section which is substantially smaller than the cross section of said one compartment, and a closure structure attached to said neck for sealingly closing the opening therein, said closure structure including a substantially cylindrical and resiliently flexible stopper means including a first portion having an outside diameter which is normally slightly larger than the inside diameter of, and sealingly received within, said neck opening, said stopper means including a second portion of reduced diameter projecting beyond the free end of said neck, said closure structure also including cap means having a top wall and a cylindrical skirt fixed to said top wall and projecting therefrom in surrounding relationship to said stopper, said skirt being externally telescoped over said neck, the improvement comprising:

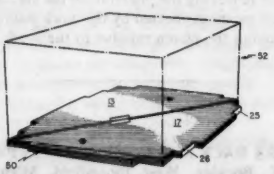
means defining a surrounding annular groove in said stopper means in surrounding relationship to said second portion adjacent the interface thereof with said first portion;

said cap means including an inner sleeve affixed to said top wall in concentric relationship with and spaced radially inwardly from said outer skirt, said inner skirt surrounding said second stopper portion and having an outside diameter adjacent at least the free end thereof no greater than the inside diameter of the neck opening so that the inner skirt can be moved axially into the neck opening along with the second stopper portion upon urging of said closure structure toward said vial, said inner skirt having radially inwardly projecting locking means disposed thereon adjacent the free end thereof and extending into said annular groove to axially mechanically interlock said stopper means and said cap means, said inner skirt having a plurality of slits formed therein and extending axially from the free end thereof, said slits dividing said inner skirt into a plurality of elongated resilient fingers so that the inner skirt effectively functions as a split collet, and one of said inner skirt and neck opening being of a converging tapered configuration as it extends axially from the outer end toward the inner end thereof to cam the resilient fingers of the inner sleeve radially inwardly as the sleeve and stopper are progressively moved axially into the neck opening to cause more secure gripping of the stopper means by the inner sleeve.

4,331,234
SHIPPING CONTAINER FOR APPLIANCES

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,160
Int. Cl.³ B65D 85/46, 19/00
U.S. Cl. 206—320 2 Claims



1. A shipping carton for appliances or the like comprising in combination an outer shipping container and an inner base pad for supporting said appliance, said outer shipping container being of generally rectangular configuration and having bottom closure flaps foldably attached thereto, a first pair of bottom closure flaps on two opposed sides of said outer container being folded to lie adjacent to said base pad, another pair of said bottom closure flaps on opposed sides thereof including a plurality of score lines which provide panels that are folded over in sequence to overlap one another and form skid like runners on each side of the outer container, said base pad being of generally rectangular configuration to fit within said outer container and formed from a single sheet of corrugated paperboard that is cut and scored to provide a plurality of panels and subpanels each including appliance attachment openings, said panels and subpanels being folded into a construction having three layers comprising, a first full sized panel of generally rectangular shape, a first pair of articulated subpanels foldably

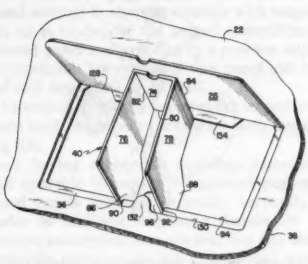
attached along one edge of said full sized panel and folded over upon themselves and a second pair of articulated subpanels foldably attached along an adjacent edge of said full sized panel and folded over upon themselves and then folded to lie adjacent to said full sized panel to provide a triple thick construction wherein said appliance attachment openings coincide, and means for attaching said appliance to said base pad through said appliance attachment openings.

4,331,235

CONTAINER WITH VENT AND BLANKS FOR FORMING SAME

David J. Brundage, Salinas, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 182,965
Int. Cl.³ B65D *85/50*
U.S. Cl. 206—423 **5 Claims**



1. A container comprising:
(a) an inner tray having a base panel and wall panels extending therefrom;
(b) an outer tray having a base panel and wall panels extending therefrom, said outer tray wall panels telescoping over said inner tray wall panels; and
(c) venting means in adjacent inner and outer tray wall panels including aligned inner and outer apertures therein and vent flaps hingedly coupled thereto along first and second fold lines respectively, for controlling access to the interior of the container by selectively moving said vent flaps between open and closed positions, said inner vent flap comprising a central portion hingedly coupled to the respective inner tray wall panel along said first fold line, and said inner vent flap further comprising two end portions hingedly coupled to said central portion along substantially parallel fold lines extending substantially perpendicularly from opposite ends of said first fold line, and locking means on said inner vent flap and on one edge of one of said inner and outer apertures for retaining said inner vent flap in said open position such that said inner vent flap holds said outer vent flap in said open position.

4,331,236

CONTAINER FOR X-RAY FILM

Walter Bauer, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,154
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901978
Int. Cl.³ B65D *81/30*; H05G *1/28*; G03B *41/16*; A65D *65/20*
U.S. Cl. 206—455 **11 Claims**

1. A container for radiation-sensitive material, particularly X-ray film, and for data-carrying sheets having a predetermined width, comprising wall means defining a first chamber for radiation-sensitive material and a second chamber for a data-carrying sheet, said second chamber having an open portion, and said second chamber having a width at least equal to said predetermined width and a length such that at least a substantial part of a data-carrying sheet can be inserted into said second chamber by way of said open portion, said wall means including spaced first and second walls which bound and are at least coextensive with said chambers, and said wall means further including a partition between said first and

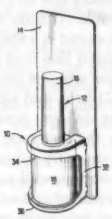
second walls separating said chambers from each other; and a movable closure means for establishing communication between said chambers so as to permit imaging of data from a data-carrying sheet onto the radiation-sensitive material and for sealing said chambers from each other.

4,331,237

SECURE DISPLAY CLIP

Morton Edell, West Orange, N.J., assignor to Hazel Bishop Industries Inc., Ramsey, N.J.

Filed Jun. 26, 1980, Ser. No. 163,263
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—461 **6 Claims**



1. A display clip for holding a container in position with respect to a display card, said display card defining a plane and horizontal and vertical directions of movement parallel to said plane, said container having an upper portion and a lower portion, said display clip comprising:
an upper loop surrounding said upper portion of said container, and including a top surface portion restraining said container from moving in said vertical direction parallel to said plane of said display card, and a front surface portion restraining said container from moving in said horizontal direction away from said plane of said display card;
a bottom loop surrounding said lower portion of said container, and including a bottom surface portion restraining said container from moving in said vertical direction parallel to said plane of said display card, and a front surface portion restraining said container from moving in said horizontal direction away from said plane of said display card;
said upper loop and said lower loop each including side portions for restraining said container from moving in said horizontal direction parallel to said plane of said display card;
vertical joining portions interconnecting said upper loop and said lower loop at their side portions; and
means for joining said display clip to said display card comprising tab portions projecting from said side portions in a direction perpendicular to said plane of said display card, said display card having openings for receiving said tab portions of said display clip, and wherein the distance between the said front surface portions of said upper loop and said lower loop and the said tabs is such that said

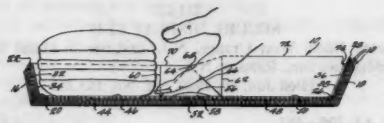
vertical joining portions and said container are held in close cooperation with said display card.

4,331,238

FAST FOOD CONTAINING AND SERVING DEVICE

Jimmy J. Hanko, and Richard F. Gulliver, both of Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Aug. 25, 1980, Ser. No. 180,809
Int. Cl.³ B65D 5/35, 43/16
U.S. Cl. 206—518 16 Claims



1. In a fast food containing and serving device comprising a thin wall structure movable (1) from a tray defining position wherein the same can be stored in a stacked nested relationship with a multiplicity of similar thin wall structures into a closed container defining position wherein fast food or the like can be contained therein and (2) from said closed container defining position back into a tray defining position wherein the same can be used in serving the fast food or the like contained therein, said thin wall structure when in said tray defining position including a flat bottom wall peripherally defined by a pair of side edges and a pair of end edges extending between said side edges; a pair of side walls extending from the side edges of said bottom wall in a direction upwardly and outwardly with respect to one another; a pair of end walls extending from the end edges of said bottom wall in a direction upwardly and outwardly with respect to one another; means for fixedly interconnecting the adjacent edges of each pair of adjacent end and side walls so that said upwardly and outwardly extending end and side walls define with said flat bottom wall a stable three-dimensional nestable tray; means for facilitating the movement of said thin wall structure between said tray defining position and said closed container defining position including a pair of spaced fold lines extending in the central portion of said flat bottom wall between the central portions of the associated pair of side walls and cooperating fold line means in the central portions of said pair of side walls; said thin wall structure when in said closed container defining position being folded along said pair of spaced fold lines and cooperating fold line means to generally enclose a fast food containing space encompassed (1) at its bottom by a portion of said bottom wall defined peripherally by one of said pair of fold lines, an adjacent end edge and the portions of said side edges extending therebetween, (2) at its top by a portion of said bottom wall defined by the other of said pair of fold lines, an adjacent end edge and the portions of said side edges extending therebetween, and (3) peripherally by said end and side walls and a central portion of said bottom wall defined peripherally by said pair of fold lines and the portions of said side edges extending therebetween, the improvement which comprises

said fold line means forming outwardly folding flaps when said thin wall structure is moved from said tray defining position to said closed container defining position, and

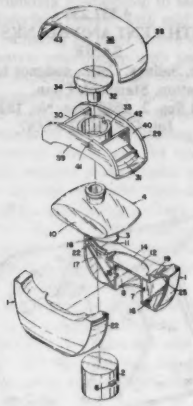
means for releasably retaining said flaps in a contiguous exterior locking position operable to retain said structure in said closed container defining position.

4,331,239

PACKAGE FOR COSMETICS AND PERFUMES

Raymond Ortal, Dauphine, France, assignor to Societe STENDHAL S.A., France

Filed Oct. 22, 1979, Ser. No. 87,018
Claims priority, application France, Feb. 13, 1979, 79 04200; Jun. 13, 1979, 79 15872
Int. Cl.³ B65D 1/30, 3/24
U.S. Cl. 206—581 6 Claims



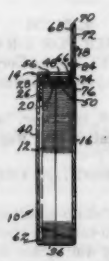
1. A device for joining together two bottles one above the other by attachment to a stopper of the lower bottle and a base of the upper bottle comprising a pair of complementary mating bottom shell portions suited for assembly in face to face relationship and a pair of complementary canope portions supporting a stopper for the upper bottle, said shells when assembled providing a first central cavity having means for firmly engaging the stopper of the lower bottle and a second central cavity overlying and separated from said first cavity for retainably enclosing the base of the upper bottle and securing said base against removal from said second cavity during use of the upper bottle, said canope portion enclosably retaining the stopper for the upper bottle and extending therebeyond to overlie the upper bottle and the mating bottom shell portions.

4,331,240

STAPLE STICK PACKAGE

Raymond A. Vanasse, West Warwick, R.I., assignor to Textron Inc., Providence, R.I.

Filed Jun. 16, 1980, Ser. No. 159,651
Int. Cl.³ B65D 5/54
U.S. Cl. 206—621 15 Claims



1. In a package including a multiplicity of U-shaped staple sticks and a thin wall box containing said staple sticks, said box

comprising a bottom wall having an upstanding front wall and a pair of upstanding side walls connected at their front ends with the ends of said upstanding front wall, a top wall having a depending front wall and a pair of depending side walls connected at their front ends with the ends of said depending front wall, a rear wall hinged to the rear of both said top and said bottom walls respectively, one pair of said side walls having their rear ends fixed to the ends of said rear wall, said box being disposed in a closed position encompassing said staple sticks with an upper portion of said upstanding front wall lapped inwardly with respect to a lower portion of said depending front wall, the improvement which comprises

said upstanding front wall having a locking tab extending forwardly from the lapped portion thereof,

said depending front wall having a first panel hinged to a lower edge thereof, a second panel hinged to an outer edge of said first panel and a flap hinged to an outer end of said second panel,

said first and second panels being folded about the associated hinge and secured in abutting relation with respect to one another so as to dispose the hinged connection between said second panel and said flap in a position adjacent the hinge connection between said first panel and the lower edge of said depending front wall,

said flap extending upwardly between the lapped portions of said front walls in cooperative relation with respect to said locking tab,

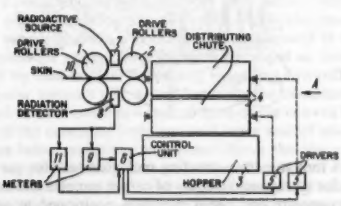
said panels having registering openings extending therethrough operable to engage a pegboard peg or the like with said panels disposed generally vertically and the remainder of said box suspended therebelow with the cooperative association between said flap and said locking tab positively retaining the box in its closed position,

said panels and flap being removable from the lower edge of said front panel to enable said box to be moved from its closed position into an open position without the aforesaid positive retention provided by the cooperative relation between said flap and said locking tab.

4,331,241
APPARATUS FOR THICKNESS SORTING OF SHEET MATERIALS

Lev N. Smirin, ulitsa Kosmonavtov, 6, kv. 1; Vladimir P. Kiselev, ulitsa Sadovaya, 13; Vladimir I. Panin, ulitsa Saina, 6, kv. 162; Vladimir I. Terekhin, ulitsa M. Toreza, 43, kv. 62; Alexei A. Valkov, ulitsa Rudneva, 199; Leonid A. Basin, ulitsa Valikhanova, 6, kv. 2, and Amangeldy Shortombaev, ulitsa M. Toreza, 34, kv. 64, all of Alma-Ata, U.S.S.R.

Filed Sep. 26, 1979, Ser. No. 78,951
Int. Cl.³ B07C 5/346
U.S. Cl. 209—589 **2 Claims**



1. Apparatus for thickness sorting of sheet materials, said apparatus comprising

accumulating hoppers equal in number to sorting grades for sheet material, said hoppers having inlets;

rotatable distributing chutes positioned at the inlets of said hoppers;

a roller conveyor for transporting sheet material to said hoppers, said roller conveyor having at least two pairs of drive rollers spaced from each other for feeding the sheet material from one pair of the other, each of the rollers having an axis;

a radioactive source positioned on one side of said sheet material between the two pairs of rollers for producing radiation in an axis directed substantially perpendicular to said sheet material through said material;

a radiation detector positioned on the opposite side of said sheet material between said two pairs of rollers and substantially perpendicular to said sheet material for receiving radiation from said radioactive source passing through said sheet material and thereby forming a radiation zone, said detector having an output, said hoppers being positioned in a row perpendicular to, and symmetrical with, a plane passing through the axis of radiation and perpendicular to the axes of said pairs of rollers;

an average radiation intensity meter for measuring the average value of the radiation intensity during a period of time not longer than the time within which a single sample of said sheet material passes through the radiation zone, said average radiation intensity meter having an input electrically connected to the output of said detector, and an output;

an instantaneous radiation intensity meter for measuring the instantaneous value of the incident radiation intensity in the absence of said sheet materials, said instantaneous radiation intensity meter having an input electrically connected to the output of said detector, and an output;

a reference voltage source having an input electrically coupled to the output of said instantaneous radiation intensity meter, and an output;

a comparison circuit for comparing a reference voltage with voltages corresponding to the intensity of radiation passing through said sheet material, said comparison circuit having a first plurality of inputs equal in number to the sorting grades for said sheet material and electrically connected to the output of said reference voltage source and a second plurality of inputs equal in number to the first plurality of inputs, one of the second plurality of inputs being electrically connected to the output of said instantaneous radiation intensity meter and the others of said second plurality of inputs being electrically connected to said average radiation intensity meter, said comparison circuit having a plurality of outputs;

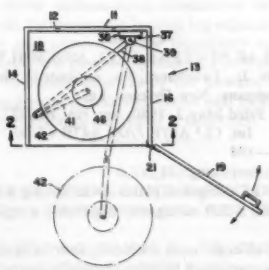
drivers coupled to said chutes for rotating said chutes; and

coupling means electrically coupling said drivers to the outputs of said comparison circuit whereby said drivers are energized and rotate said chutes in accordance with the results of the comparing of voltages of said comparison circuit.

4,331,242
RECORD STORAGE SYSTEM

James W. Scott, 2491 Truman Ave., Oakland, Calif. 94605

Filed Jun. 23, 1980, Ser. No. 162,116
Int. Cl.³ A47B 81/06
U.S. Cl. 211—40 **1 Claim**



1. A storage system for phonograph records comprising

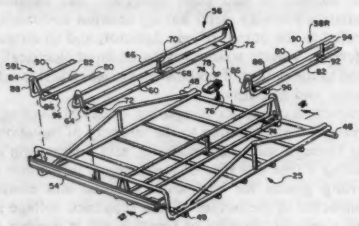
a support plate adapted to be mounted on a wall or the like,
a plurality of horizontally disposed support discs with each having an upstanding shaft at the center thereof for receiving and supporting a stack of phonograph records,
a plurality of multiple link supports with each including a first support arm pivotally mounted at a first end to said support plate, and a second support arm pivotally connected at one end to a second end of said first arm and extending into connection with an underside of a support disc for mounting said discs to swing toward and outward from said plate, and
said support discs and multiple link supports therefor being disposed in vertically spaced relation along said plate, whereby a stack of records may be stored on each disc.

4,331,243

GRAVITY FLOW RACK

Eugene N. Doll, Mundelein, Ill., assignor to Market Innovators, Inc., Lombard, Ill.

Filed Dec. 3, 1979, Ser. No. 99,840
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—49 D **9 Claims**



1. A gravity flow rack comprising:
a vertically oriented framework;
a bent wire shelf comprising a bent wire rod member having a pair of parallel arms interconnected by front upright legs and a front horizontal segment, and front and rear cross rods connected to said parallel arms;
a pair of bent wire divider-track members on said shelf, each of said divider-track members comprising a single-wire track and cooperating to form a merchandise row wherein merchandise containers are supported beneath by only the two wire tracks;
connector means releasably connecting said divider-track members to said shelf; and
mounting means releasably and adjustably mounting said shelf on said framework,
each of said divider-track members comprising further a pair of mounting rods spaced for abutment with said front and rear cross rods for connection thereto by said connector means.

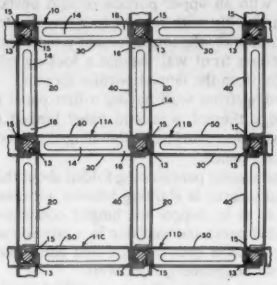
4,331,244

MODULAR NUCLEAR FUEL ASSEMBLY RACK

C. Fred Davis, Jr., Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed May 2, 1980, Ser. No. 146,727
Int. Cl.³ A47F *7/00*; A47B *47/00*
U.S. Cl. 211—194 **1 Claim**

1. A rack comprising:
a plurality of elongated plates each having a front side, a back side, a left elongated edge and a right elongated edge;
a plurality of cells, each including four of said plurality of plates interattached to form the walls thereof;
each of said plurality of plates including a left tab attached to the left edge of said plate, a right tab attached to the right edge of said plate, said left tab and said right tab extending from the plane of said plate toward the rear thereof,
a left tab extension attached to the rear edge of said left tab and extending toward the right of said plate;
said right tab of each of said four plates of each of said cells being attached to the plate of the right thereof at the left side of the front surface of the base of said plate to the right thereof, to form, from the walls of said four plates, a



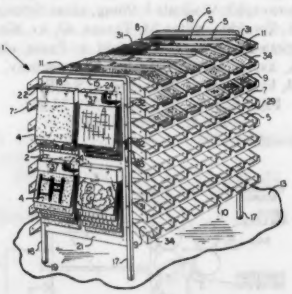
right square prismatic compartment being open on both ends;
said plurality of cells being arranged in an array to form a plurality of cavities, one between each pair of adjacent said cells, said cavities being capable of accepting a neutron absorbing material;
a space at the intersection of four cells defined by the front surfaces of the left tab extensions of the four cells; and a bar positioned in said space to interlock the four cells.

4,331,245

CARPET SAMPLE DISPLAY RACK

Dennis L. Schell, Rte. 1, Olathe, Kans. 66061

Filed Aug. 16, 1979, Ser. No. 67,126
Int. Cl.³ A47F *7/16*
U.S. Cl. 211—49 D **1 Claim**



1. A movable, free-standing rack structure for use in a retail store for storage and display of carpet samples and comprising:
(a) opposite end panel members positioned in spaced, upright relationship, at least one of said panel members having fasteners thereon for supporting a plurality of large carpet samples thereon;
(b) leg members extending from said end panel members for contact with a floor surface;
(c) a plurality of supportive shelf members extending between and connected to said end panel members to form a free-standing rack structure, said shelf members respectively having generally planar midportions and downwardly inclined front and rear portions;

(d) elongate side wall members on each of said shelf members extending from said front to rear portions and dividing said shelf members into narrow, side-by-side trays and front and rear wall members respectively extending along said front and rear portions;

(e) rod members extending between and connected to said end panel members and extending through said side wall members at junctures of said shelf member midportions with said front and rear portions;

(f) a plurality of elongate carpet sample strips matching said large carpet samples and lying in said trays and having a width for fitting between said side wall members and a length less than the distance between said front and rear wall members, said carpet sample strips having first and second ends with the first ends respectively on said front and rear portions and the second ends in overlapped relationship, said carpet sample strips underlying said rod members and extending down said front and rear portions for display and view thereof by a prospective purchaser; and

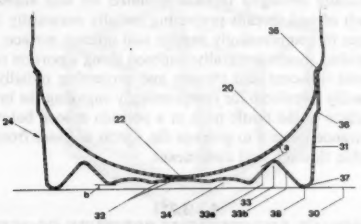
(g) a cutting tool engageable on said rack structure and operable for cutting a portion from a selected carpet sample strip for removal from said rack structure whereby said portion can be removed from said store and taken to a proposed installation site for viewing.

4,331,246

CONTAINER

Erling Sörensen, Odense NV, Denmark, assignor to PLM AB, Malmo, Sweden

Filed May 1, 1980, Ser. No. 145,682
Claims priority, application Sweden, May 11, 1979, 7904153
Int. Cl.³ B65D *23/00*
U.S. Cl. 215—1 C **9 Claims**



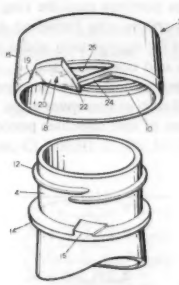
1. A composite container comprising an elongted container body of a plastic material having a convex bottom section and an annular shoulder means, and a stand of a plastic material supporting the container in a vertical position, said stand including a conical collar with an upper edge surface which is in contact with and surrounds said annular shoulder means, an annular support having a contact surface disposed in a plane and adapted for resting on a planar surface and an inner wall enclosed by said conical collar and extending inwardly from said annular support and means securing the container body and stand to each other in a central zone of the convex bottom section of the container body and said inner wall of said stand, said zone being positioned in a plane above the plane of said annular support on the planar surface, said inner wall comprising a first annular conical wall portion extending axially upwards and radially inwardly from said annular support, a second annular conical wall portion extending radially inwardly and axially downwards from said first conical wall portion, said first and second conical wall portions having an annular intersection zone which faces and is axially spaced from said convex bottom section of said container body, said first and second conical wall portions and said annular intersection zone forming a first elastic indentation means concentric with the axis of the container and spaced from said convex bottom section predetermined distance adjusted to the full weight of the container body for contacting said container body, upon relative movement between said container body and said stand, to undergo elastic deformation, said inner wall further comprising a third annular wall portion extending axially upwardly and radially inwards from said second wall portion, said second and third wall portions having an annular intersection zone which faces and is axially spaced from said plane of the annular support, said second and third wall portions and said annular intersection zone thereof forming a second elastic indentation means for contacting the planar support surface upon relative movement between said stand and said support surface to undergo elastic deformation, and a fourth wall portion extending radially inwards from said third annular wall portion and including the central zone of said stand, said container body and stand being in contact only in said central zone and at said annular shoulder means and the upper edge surface of the conical collar, the stand and container being elsewhere in spaced relation including the first, second, and third wall portions and the conical collar below said upper edge surface.

4,331,247

ONE PIECE CHILD-RESISTANT CLOSURE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 15, 1980, Ser. No. 187,299
Int. Cl.³ B65D *55/02, 85/56*
U.S. Cl. 215—216 **3 Claims**



1. A closure for cooperation with a container having a threaded annular neck defining a dispensing opening and an upwardly projecting locking lug adjacent the container neck, said closure comprising a circular panel section, an annular skirt depending from the periphery of said panel, threads formed in the interior surface of said skirt for cooperation with the threads on the container neck, a pawl integrally formed on said skirt, said pawl extending radially outwardly from the outside surface of said annular skirt and extending circumferentially around only a segment of said skirt, the circumferential end of said pawl which faces the direction of rotation for removal of said closure defining a axial detent surface, said pawl and detent surface being constructed and arranged to interfere with the projecting locking lug adjacent the container neck when said closure is fully threadably engaged on the container neck, said pawl being manually deflectable upwardly to permit rotational removal of the closure, and said skirt having a segmental slot formed above said pawl, whereby the manually deflection of said pawl is facilitated.

4,331,248

SELF LOCKING CONTAINER CLOSURE

Ernst R. Jamer, 625 Shelter Creek La. #353, San Bruno, Calif. 94066

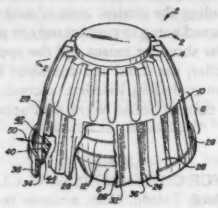
Filed Aug. 29, 1980, Ser. No. 182,552
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—256 **18 Claims**

1. A container closure for use on a container of the type

having a hollow neck, a rim at the end of the neck, the rim circumscribing the mouth of the container, and a ring extending around the neck, the closure comprising:

a top portion adapted to seat against said rim to seal said container;

a skirt depending from said top portion to surround a portion of said neck, said skirt having an upper edge attached to said top portion, a lower edge opposite said top edge, said lower edge adapted to extend past said ring, and a plurality of resilient radially expandable segments;



said skirt having a plurality of inwardly directed shoulder portions, said shoulder portions having means for rotationally biasing said shoulder portions away from the ring as said shoulder portions pass the ring on the container, said shoulder portions also including a ring engagement surface adapted for engagement under said ring to secure said closure on said container; and

means, surrounding said shoulder portions and removably attached to said skirt at the lower edge, for restricting the radial movement of said shoulder portions.

4,331,249

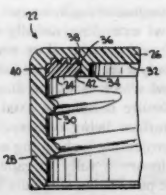
PLASTIC CLOSURE MEMBER WITH FLOWED-IN LINER

John N. Banich, Sr., Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 10, 1981, Ser. No. 242,196

Int. Cl.³ B65D *53/00*

U.S. Cl. 215—343 **4 Claims**



1. A closure assembly comprising a plastic closure member and a liner seated in said closure member, said closure member having an internal annular channel, said liner being separately formed and seated in said channel, and there being a mechanical interlock between said liner and said closure member other than said liner being seated in said channel, said closure member including an end panel of which a portion defines a base of said channel, and said mechanical interlock including pocket means formed in said base and projecting portions of said liner seated in said pocket means, said pocket means being in the form of a grid of crossing channels.

4,331,250

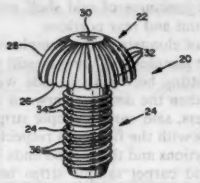
CAM ACTION CORK

Richard N. Lever, 401 NE. Second, Enterprise, Oreg. 97828

Filed Mar. 20, 1980, Ser. No. 132,396

Int. Cl.³ B65D *39/08*

U.S. Cl. 215—356 **3 Claims**



1. In combination with a wine bottle having an interior surface in its neck, a sealing cork for maintaining gases and liquids within said bottle, comprising:

(a) an enlarged head portion having base means for limiting the degree of insertion of said cork into said bottle and raised gripping surface means distributed radially about said head portion in spaced apart relation for applying rotary force to said cork;

(b) an elongate shank having a predetermined cross section less than that of said head portion, mounted upon said head portion and projecting at a right angle from said head portion;

(c) cam means for bearing upon the interior surface within the neck of said bottle and thrusting said cork from said bottle in response to a counter clockwise force applied to said gripping surface means, including a group of resilient helically arranged threads mounted on said shank and each of said threads projecting radially outwardly therefrom to compressingly engage said interior surface; and

(d) sealing means integrally disposed along a portion of said shank adjacent said threads and projecting radially outwardly therefrom for compressingly engaging the interior surface of the bottle neck at a position spaced below the entrance thereof to prevent the egress of gases from said bottle through said cam means.

4,331,251

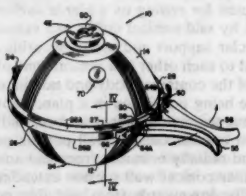
COMPACT, LIGHTWEIGHT PRESSURE COOKER

Stanley J. Berman, 4148 Old San Jose Rd., Santa Cruz, Calif. 95065; Judith M. Berman, Santa Cruz, Calif., and Heiko T. deMan, Gualala, Calif., assignors to Stanley J. Berman, Santa Cruz, Calif.

Filed Dec. 18, 1980, Ser. No. 217,829

Int. Cl.³ A47J *27/08*; B65D *45/32, 25/28*

U.S. Cl. 220—4 B **8 Claims**



1. A compact, lightweight pressure cooker assembly comprising, in combination:

first and second pan members each having mutually conforming surface portions permitting nestable, stacked engagement of one pan member within the other when disassembled, and each pan member having an annular, flanged rim permitting mutually superposed mating en-

gagement with each other when assembled thereby enclosing a cooking chamber;

first and second clasp members coupled in hinged engagement to one of said pan members for pivotal movement, each clasp member having edge portions defining a channel for receiving and confining the superposed flanged rims, and said clasp members being movable from a retracted, closed position of latching engagement with said superposed pan members in which said flanged rims are received within the channels in gripping engagement by said clasps, to an open extended position in which said rims are released, thereby permitting disengagement of the flanged rims and separation of said pan members;

first and second handle members pivotally coupled to said first and second clasp members, respectively, said handle members being movable from an extended position relative to said clasps in which both handles may be grasped and held together with one hand to a retracted position in which said handles engage said clasps;

an annular gasket compressively confined between the superposed rim portions defining a fluid seal; and,

a pressure relief valve communicating with the cooking chamber for venting said chamber when the cooking pressure exceeds a predetermined level.

4,331,252

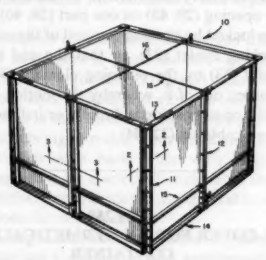
MODULAR STORAGE TANK

Thomas G. Carren, and Asher B. Etkes, both of New York, N.Y., assignors to ModuTank, Inc., Long Island City, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,130

Int. Cl.³ B65D *6/24, 6/34, 25/16*

U.S. Cl. 220—5 A **6 Claims**



1. A rectangular storage tank for the containment of liquids and the like comprising a plurality of elongated upright frame members arranged to form a quadrilateral; top, bottom and intermediate horizontally disposed rail members secured to said upright frame members to define discrete modular sections formed by and intermediate two adjacent upright frame members, wall panels of thin gauge sheet metal, means for securing the ends of said panels to adjacent ones of said upright frame members to form a wall structure between said frame members, a flexible liquid-impervious liner internally of and depending from said wall panels, supplementing reinforcing/adjustor wall panels across the bottom of said wall panels up to the height of the intermediate rail members, said intermediate rail members being arranged at a height of approximately one-third of the total height of the tank, said supplementary reinforcing/adjustor wall panels being provided with inwardly facing horizontal flanges at the bottom thereof to prevent extrusion of the liner beneath said wall panels, cable tensioning means attached to top and bottom portions of said upright frame members, said cable tensioning means extending perpendicularly from one wall structure and across the interior of said tank to top and bottom portions of an upright frame member located in an opposite wall structure of said tank whereby outward hydrostatic loads within said tank from a contained liquid may be selectively compensated.

4,331,253

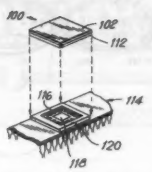
LID ASSEMBLY FOR HERMETIC SEALING OF A SEMICONDUCTOR CHIP

Richard Gordon, Scarsdale, and John G. Ciallella, White Plains, both of N.Y., assignors to Consolidated Refining Co., Inc., Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 122,527, Feb. 19, 1980, Pat. No. 4,291,815. This application Mar. 13, 1981, Ser. No. 243,389

Int. Cl.³ B65D *7/28, 6/40, 39/00*

U.S. Cl. 220—200 **12 Claims**



1. A lid assembly for hermetic sealing of a package containing a semiconductor chip comprising: a lid of metallic material including a single integral heat fusible layer deposited on said lid in a peripheral region defining a hermetic sealing area.

4,331,254

SEALING ARRANGEMENT

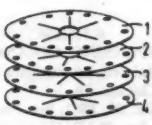
John Haggerty, Warlingham, England, assignor to Butterworth Systems Inc., Florham Park, N.J.

Filed Sep. 8, 1980, Ser. No. 185,221

Claims priority, application United Kingdom, Sep. 12, 1979, 7931590

Int. Cl.³ B65D *51/00, 51/18*

U.S. Cl. 220—229 **16 Claims**



1. A seal for an opening through which an object extends which comprises a stack of flexible sheets one on top of each other, each of at least two adjoining sheets having an aperture therein and a series of slits radiating from said aperture towards the perimeter of the sheet and each of at least two other adjoining sheets having a series of slits meeting each other in an area of the sheet adjacent to said aperture in the apertured sheets and radiating towards the perimeter of the sheet, the series of slits in at least two adjacent sheets being offset with respect to each other.

4,331,255

CUP COVER

George J. Fournier, 34 Waldo Rd., Milton, Mass. 02187

Filed Aug. 18, 1980, Ser. No. 178,961

Int. Cl.³ A47G *19/22;* **B65D** *41/26*

U.S. Cl. 220—259 **5 Claims**

1. A cover for a container comprising

A. a first discoid cover section, said first cover section including

1. a peripheral channel, said channel being arranged to resiliently engage over the rim of a cup or other container,

2. an array of relatively small openings, and

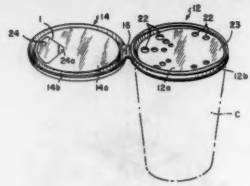
3. a relatively large contiguous area which is imperforate,

B. a second discoid cover section having substantially the

same dimensions as the first section, said second cover section having

1. a peripheral channel arranged and adapted to resiliently engage over the channel on the first cover section, and
2. means in the second cover section for producing a defined opening therein,

C. an integral hinge connecting the two cover sections so that the second section can be flipped over and superim-



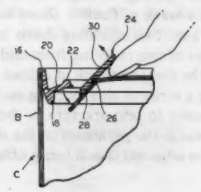
posed on the first section with its channel engaging the first section channel so as create a shallow passage between the two sections which is bounded by a peripheral fluid-tight seal, the array of openings in the first section and the opening producing means in the second section being positioned relative to the hinge so that, when the two sections are superimposed, the opening producing means is positioned directly above said imperforate area of the first cover section.

4,331,256

LID DISPENSING ARRANGEMENT

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 27, 1981, Ser. No. 248,273
Int. Cl.³ B65D *17/30*
U.S. Cl. 220—267 **8 Claims**



1. A dispensing arrangement for a composite plastic and paperboard lid, comprising:

(a) an annular molded plastic rim including an outer, side flange, adapted for attachment to a wall of a container body, and an integral, inner, end flange extending radially inward therefrom;

(b) a relatively thin paperboard central panel having a marginal portion of its upper surface bonded to a lower surface of said rim end flange;

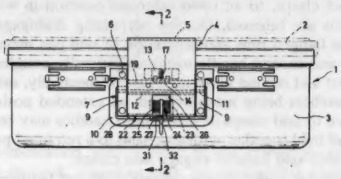
(c) said rim including an integral tab pivotally mounted with respect thereto and having one end engageable with a portion of said central panel whereby when the other end of said tab is lifted said one end will be depressed and will force a portion of said central panel away from said rim end flange to provide a dispensing opening in said lid.

4,331,257

CLOSURE FOR A CONTAINER HAVING ADDITIONAL SECURING MEANS

Wolfgang Taschner, Tuttlingen, Fed. Rep. of Germany, assignor to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,686
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—324 **8 Claims**



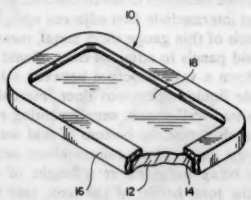
1. Closure for a container to store and transport items needed in hospitals, with a locking lid, supported on the side of the container, which can pivot around a horizontal axis, and an adjustable falling latch supported between the side and the locking lid, which can move under the action of gravity into a locking position in which the locking lid is firmly fixed against swinging into the open position, characterized by the fact that means are provided to prevent reliably the swinging of the locking lid **(4)** from the closed position into the open position, and that the means comprise cable ties **(32, 44)** with a locking eyelet **(33)** with a retaining element **(34)** at one end and another end which can be introduced into it, which are passed through at least one opening **(29; 43)** on one part **(24; 40)** of the closure and are then locked by pushing one end of the cable tie **(32; 44)** into the locking eyelet **(33)**, so that the end is fixed in the locking eyelet **(33)** by the retaining element **(34)** and can no longer be pulled out of it, whereby the motion of the locking lid **(4)** into the open position is directly or indirectly prevented by the locked cable tie **(32, 44)**.

4,331,258

SEALING COVER FOR AN HERMETICALLY SEALED CONTAINER

Gary I. Geschwind, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 5, 1981, Ser. No. 240,645
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—359 **7 Claims**



1. A sealing cover for hermetically sealing a container, comprising:

(a) an environmentally resistant metallic lid;

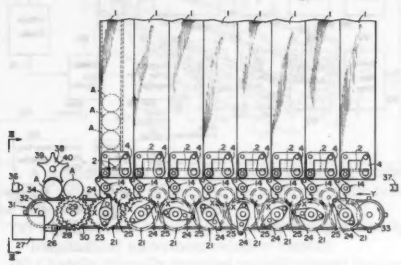
(b) an intermediate layer comprising metal plating on only that part of the surface of said lid which is to be rendered solderable; and

(c) a layer of solder disposed on said intermediate layer and metallurgically bonded thereto.

4,331,259
APPARATUS FOR CONTROLLING DISCHARGE OF LIKE ARTICLES FROM A PLURALITY OF CONTAINERS

Yoshiyuki Imamura, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 94,116
Claims priority, application Japan, Nov. 17, 1978, 53-142084
Int. Cl.³ G07F 11/12
U.S. Cl. 221—11 6 Claims



1. An article discharging apparatus wherein the apparatus accommodates therein a plurality of containers removably mounted in the apparatus, the containers containing therein articles to be discharged and being disposed in a predetermined arrangement and including doors closing bottom openings of the containers, means for locking the doors in closed positions to hold the articles within the containers, said apparatus comprising:

a series of actuators rotatable about axes and disposed outside of the containers at positions corresponding to said doors, respectively, for unlocking said means for locking the doors one after another according to said arrangement so that articles in the containers are discharged therefrom, said actuators being movable from initial angular positions and interlocked with each other with their actuating points being offset by a selected angle from each other;

means for discharging outside of the apparatus articles discharged from the containers;

means for driving said actuators to rotate whereby, when the door for the last container in said arrangement has been unlocked, all the actuators automatically return to their initial angular position; and

means for sensing discharge of the last article from a container and for generating a control signal after discharge of the last article, said means for driving being responsive to said control signal to rotate said actuators through an angular distance equal to said selected angle.

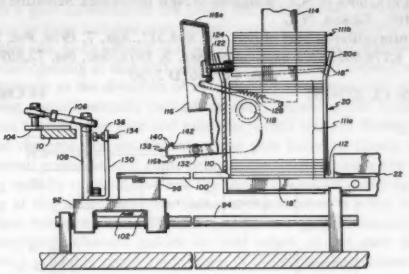
4,331,260
SLIDE MOUNTER WITH SLIDE SEPARATOR/OUT-OF-SLIDE INHIBITOR

Charles L. Euteneuer, St. Michael, and Armer J. Willenbring, Bloomington, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 15, 1980, Ser. No. 152,023
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021441
Int. Cl.³ B65H 7/04; B65G 59/06
U.S. Cl. 221—19 15 Claims

1. In apparatus for mounting a photographic film transparency into a slide frame of the type having a magazine for holding a plurality of slide mounts in stacked relationship and having slide ejector means movable along a path for ejecting a slide mount from the magazine into a slide track, the improvement comprising:

slide separator means for separating the plurality of slide mounts into an upper stack and a lower stack; and

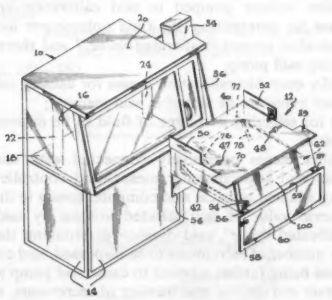


latch means operably linked to the slide separator means for preventing movement of the slide ejector means when no further slide mounts are in the upper stack.

4,331,261
RETROFIT SINGLE-NEWSPAPER SECURITY DISPENSER

Kelly G. S. Brown, 4220 E. Florence St., Simi Valley, Calif. 96306

Filed Aug. 29, 1980, Ser. No. 182,440
Int. Cl.³ B65H 1/08
U.S. Cl. 221—232 19 Claims



1. A single newspaper dispenser for positioning in a newspaper rack having a door so that, upon each opening of the door, a single newspaper is dispensed, the newspaper rack having a table therein for the support of a stack of newspapers, said single newspaper dispenser comprising:

a relatively stationary housing for positioning within the newspaper rack, said housing having guide tracks therein;

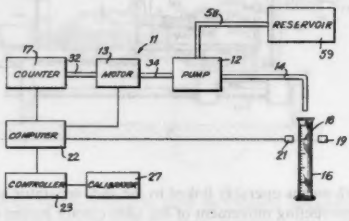
a table movably mounted within said housing for movement from a rest position where it is positioned within the newspaper rack to an extended position wherein it extends partly from the newspaper rack;

a downwardly directed tongue on said movable table adjacent the rear thereof for engagement behind the top newspaper on a stack of newspapers within the newspaper rack so that as said table moves from its rest position to its extended position it draws the top newspaper from the stack of newspapers to dispense a single newspaper from the newspaper rack.

4,331,262
CALIBRATABLE AUTOMATIC FLUID DISPENSER

Philip Snyder, Lawrenceville, and David Freedman, Highland Park, both of N.J., assignors to New Brunswick Scientific Co., Inc., Edison, N.J.

Continuation-in-part of Ser. No. 894,317, Apr. 7, 1978, Pat. No. 4,170,861. This application Sep. 5, 1979, Ser. No. 72,859
Int. Cl.³ B67D 5/30
U.S. Cl. 222—37 14 Claims



1. A fluid dispenser comprising:

pump means arranged and constructed for dispensing a fluid dose in increments of essentially equal size;

calibration collection means for receiving the fluid output of said pump means;

conduit means connected with said pump means for transfer of said fluid to said calibration collection means;

counting means for counting the number of increments of fluid pumped by said pump means;

sensing means for detecting a calibration volume output of said pump means in said calibration collection means;

computer means having a memory and programmable for dividing on command the number of increments of fluid pumped to said calibration collection means by said calibration volume pumped to said calibration collection means for determining the fluid volume per increment, hereinafter termed "calibrated value," and thereby calibrating said pump;

manually operable calibration means for causing said "calibrated value" to be stored in said memory;

means for selecting a volume of fluid to be dispensed to a receiver;

controller means operatively connected with said pump means and said computer means, said controller means being adapted to cause said computer means to divide the numeric value of said selected volume by said stored "calibrated value", said division determining the necessary number of increments to be dispensed, said controller means being further adapted to cause said pump means to operate and deliver said number of increments, whereby the selected volume of fluid is dispensed to said receiver.

4,331,263
CONTROL UNIT FOR USE IN A VIBRATORY FEEDER SYSTEM

George J. Brown, Capistrano Beach, Calif., assignor to Christopher Scientific Co., Inc., Anaheim, Calif.

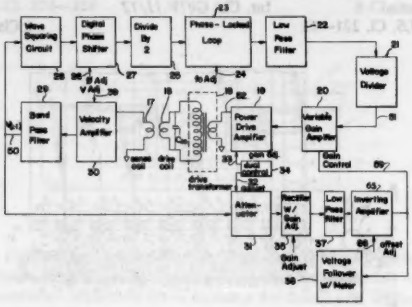
Filed Nov. 30, 1979, Ser. No. 98,828
Int. Cl.³ B65G 27/24; H02K 33/00
U.S. Cl. 222—63 21 Claims

1. In a vibratory feeder system for delivering product at a predetermined rate including a vibratory feeder having a platform for receiving a product dispensing receptical and an electromagnetic driver unit for imparting reciprocal vibratory movement to said platform, an improved control unit therein comprising:

sensing means for sensing the third harmonic of the drive current signal in the electromagnetic driver unit;

amplitude control means responsive to said third harmonic signal for determining whether said amplitude of said vibratory movement of said platform corresponds to a desired predetermined vibratory amplitude;

frequency control means responsive to said third harmonic signal for determining whether said frequency of said vibratory movement of said platform corresponds to a mechanical resonant frequency of said vibratory feeder; and

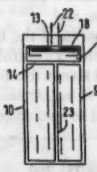


driving means responsive to said amplitude control means and to said frequency control means for providing said driving signal at an amplitude and frequency such that said amplitude and frequency of said vibratory movement corresponds to said desired predetermined amplitude and said resonant frequency, respectively.

4,331,264
PACKAGE FOR ACCOMMODATING AND EJECTING SMALL AMOUNTS OF FLOWING MATERIAL

Marcel J. H. Staar, Brussels, Belgium, assignor to Panpack A.G., Vaduz, Liechtenstein

Filed Jun. 5, 1980, Ser. No. 156,625
Claims priority, application Belgium, Jun. 8, 1979, 876856
Int. Cl.³ B65D 35/22
U.S. Cl. 222—94 11 Claims

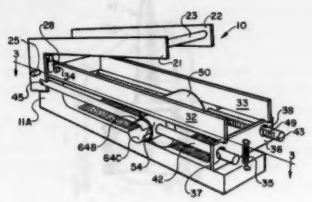


1. In a package for storing and ejecting small amounts of flowing material, especially liquids, viscous or pasty material, said package comprising foil sections which are joined together and form a sealed compressible container for storing said material, and a discharge opening adapted to eject said material, the improvement comprising a chamber between said compressible container and said discharge opening, separated from said container by a barrier including a predetermined rupture site and having throttle means associated with said chamber for regulating the flow of material being ejected from said container to said discharge opening when external pressure is applied to compress said compressible storage container and continued after said barrier is ruptured at said site by said external pressure.

4,331,265
TUBE SQUEEZER-DISPENSER WITH DRIP PREVENTION

Harley A. Warlick, Rte. 2, Bostic, N.C. 28018

Filed Jan. 7, 1981, Ser. No. 223,136
Int. Cl.[3] B65D *35/28*
U.S. Cl. 222—101 4 Claims



1. A tube dispenser for progressively emptying a tube from one end by applying pressure to the contents of the tube from the other end and comprising:

(a) a support for receiving and supporting a tube against longitudinal movement relative thereto;

(b) a handle pivotally mounted on said support and having a range of reciprocating movement between first and second pre-determined points for applying an increment of pressure to one end of the tube; and

(c) ratchet means operatively connected to said handle and comprising a pair of parallel, spaced-apart and longitudinally extending elongate rails having a roller rotatably mounted transversely therebetween for limited movement from the closed end of the tube towards the open end of the tube, each of said rails being provided with teeth along one radially aligned surface thereof angled toward the direction of forward movement of said roller, and a pair of collars extending axially outwardly beyond the opposing end edges of said roller and having apertures therein for being slidably movable along said rails, and including means whereby during each reciprocation of said handle said roller is incrementally moved forward against said tube exerting pressure thereon and then maintained in said position during movement of said handle to a point defined relative to the pivot point of said handle on said support and beyond said pivot point to an over-center position where said roller releases sufficient pressure on the contents of the tube to prevent residual emptying or dripping thereof after each successive reciprocating movement of the handle thereby permitting a precisely metered flow of the contents from the tube.

4,331,266
FINGER-ACTUATED SLIDEABLE-GATE DISPENSING VALVE

Curtis J. Bond, Marion, Ohio, assignor to Liqui-Box Corporation, Worthington, Ohio

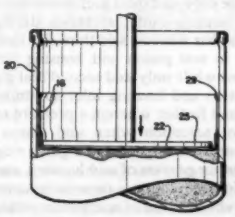
Filed Jul. 3, 1980, Ser. No. 165,499
Int. Cl.[3] B67D *5/60*; B65D *47/00*
U.S. Cl. 222—107 8 Claims

1. A gate dispensing valve assembly comprising a tubular mounting sleeve having a dispensing passage extending therethrough with an inlet end and outlet end, a guide at the outlet and extending radially at a right angle to the axis of the sleeve, and a gate mounted on the guide for reciprocable movement thereon from a closed position, in covering relationship to said outlet end, to an opened position radial of said end to expose an outlet opening at said end, said gate being curved transversely relatively to the direction of movement thereof and said guide being complementally curved transversely, and guide connections between the gate and guide to permit relative sliding for said reciprocable movement of the gate between closed and opened positions, said guide being in the form of a plate extending radially of the sleeve and the sleeve having its outlet opening at the plate, said gate being in the form of a plate, both plates being in close slideable contact, said guide connections comprising channel guides on side edges of the gate plate which slideably receive side edges of the guide plate; means for sliding the gate plate on the guide plate by gripping with the fingers, said means comprising a radial extension on the gate plate having radially-spaced inner and outer finger lugs, and said guide plate having a guide and finger lug through which said extension slideably projects and which is located with said outer lug adjacent the guide and finger lug when the gate plate is in the closed position but with the inner finger lug adjacent the guide and finger lug when the inner lug is squeezed towards the guide and finger lug by fingers engaging the guide and finger lug and said inner lug to move said valve plate to the opened position, said outer lug and said guide and finger lug being engageable by fingers to move said valve plate to the closed position.

4,331,267
CAULKING TUBE PLUNGER AND ENCLOSURE ASSEMBLY

Gail F. Duncan; Emerson F. Browning, and Karl Rotterman, all of Dayton, Ohio, assignors to Tri-Made Products, Inc., Dayton, Ohio

Filed Aug. 15, 1980, Ser. No. 178,648
Int. Cl.[3] B65D *47/04, 83/00*
U.S. Cl. 222—153 5 Claims



1. A combined caulking tube plunger and enclosure assembly comprising:

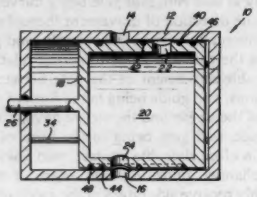
a drawn metal generally cup-shaped body having a bottom wall, a circular side wall adapted to form a close fit with the inside diameter of a caulking tube, an outer rim proportioned to be rolled over an end of the tube forming a seal therewith, means in said side wall defining an inwardly directed annular rib positioned inwardly of said rim, and a circumferential break-away score, formed as an incised portion in the outer wall of said rib, which is severable upon the application of a force to said bottom wall by a caulking gun ram to separate said bottom wall from said rim thereby forming a caulking tube plunger, whereby the separating forces applied by said caulking gun ram to said bottom wall tend to straighten said rib thereby opening the incised portion and concentrating the tearing forces to the metal of said wall immediately underlying said incised portion.

4,331,268

SEAL FOR COMPRESSED AIR LINE DRAIN DEVICE

James R. Chisholm, 771 Coral Dr., Cape Coral, Fla. 33904

Filed Aug. 29, 1979, Ser. No. 70,427
Int. Cl.³ B01D 53/04; F16T 1/45; F16K 24/04; G01F 11/16
U.S. Cl. 222—361 2 Claims



1. In a drain device having a housing with an inlet aperture and an outlet aperture, a piston having an inlet aperture and an outlet aperture, said piston being displaceable within said housing between a first position wherein said inlet apertures are aligned, and a second position wherein said outlet apertures are aligned, the improvement comprising:

first seal means concentrically positioned about said piston inlet;

second seal means of a generally oval shape and being positioned about said first seal means in an offset manner whereby a first space is created between said first seal means and said second seal means, said first space being of a greater width toward one end of said housing than toward the other end thereof;

third seal means concentrically positioned about said piston outlet;

fourth seal means of a generally oval shape and being positioned about said third seal means in an offset manner whereby a second space is created between said third seal means and said fourth seal means, said second space being of a greater width toward one end of said housing than toward the other end thereof;

said first and second seal means both serving to seal a port created when said piston and housing inlet apertures are aligned while only said third seal means serves to seal said piston and housing outlet apertures during such alignment, and further wherein said third and fourth seal means both serve to seal piston and housing outlet apertures when aligned while only said second seal means serves to seal said piston and housing inlet apertures during such alignment, and further wherein a pressure release valve is provided for actuation when said piston and housing outlet apertures are aligned and a guide ridge is provided along an interior portion of said housing, such guide ridge being positionable within a depression contained on said piston whereby rotation of said piston within said housing is prevented during a movement of the same therein.

4,331,269

NOZZLE ADAPTER FOR TILT ACTUATED NOZZLE DOWN VALVES

William M. Holman, St. Peters, Mo., assignor to Clayton Corporation, St. Louis, Mo.

Filed Jul. 10, 1980, Ser. No. 168,186
Int. Cl.³ B65D 83/14
U.S. Cl. 222—402.21 2 Claims

1. A nonelastic thermoplastic adapter nozzle that is attachable to a tilt actuated nozzle down valve , wherein said valve is located on a container and is a spring less nozzle down tilt actuating valve comprising a straight stem section, a flexible stem section, a section of threads located between the straight stem section and the flexible stem section, and a flared section located between the threads and the flexible, stem section, said adapter nozzle comprising a top portion which is suitable for cutting to a desired size opening, a body portion which encloses the stem of the valve, and a bottom portion which has a lug on its interior surface that snaps over and abuts the flared section of the valve and forms an immobile sealing relationship with the flexible section of the valve, wherein the nozzle is

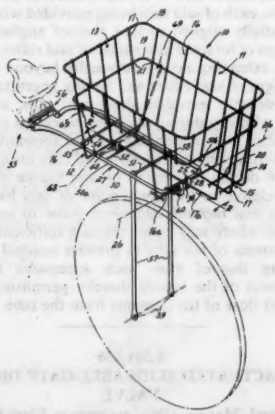
tapered from the bottom section to the top section along both the interior surface of the body portion of the nozzle contains a plurality of vertical ribs, wherein the ribs engage both an outermost portion of the threads and the straight stem section.

4,331,270

BICYCLE BASKET

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Maysville, Ky.

Filed Oct. 15, 1980, Ser. No. 197,245
Int. Cl.³ B62J 7/04
U.S. Cl. 224—32 R 15 Claims



1. A bicycle basket connectable to a bicycle carrier rack, said basket comprising

walls and a floor to define the basket cavity of said basket,

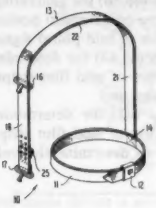
a connector bracket swingably mounted to said basket's floor, said connector bracket being pivotable to a first use position at which said bracket is adapted to interconnect said basket with a first carrier rack structure, and said bracket being pivotable to a second and different use position at which said bracket is adapted to interconnect said basket with a second and different carrier rack structure, and

said first carrier rack comprising a tongue, and said connector bracket comprising a latch web that defines a latch slot opening therein, said latch slot structure being adapted to receive said tongue on said first carrier rack through the latch slot opening, thereby permitting connection of said bracket with said first carrier rack structure without use of a separate fastener.

4,331,271
SLING FOR SHOULDER GUNS

Jeffery J. Anderson, P.O. Box 11, McCann Mill Rd., Pottersville, N.J. 07979

Filed Feb. 19, 1981, Ser. No. 236,222
Int. Cl.[3] A41F *15/00*
U.S. Cl. 224—150 6 Claims



1. In a sling for carrying a shoulder weapon having a barrel end and a butt end and an attaching element at each of said ends, said sling comprising:

two strap sections;

the first of said strap sections having two free ends and having a length sufficient to encircle the waist of a wearer when said free ends are coupled together;

the second of said strap sections having one end portion fixedly attached to said first strap section intermediate said two free ends;

the other end portion of said second strap section being adapted for cooperation with said butt end attaching element of a weapon to be carried;

said second strap section having a length such that when the sling is worn the said second strap section extends diagonally over the wearer's chest and downwardly over the wearer's back;

said second strap section including quick-release attaching means adjacent said other end portion for releasably securing said second strap section to said first strap section at a location remote from the location where said one end is fixedly attached to said first strap section;

said second strap section having a lengthwise sliding connection with said barrel end attaching element of a weapon to be carried;

whereby a shoulder weapon can be carried while disposed on a generally vertical plane with the barrel end pointing upwardly and said quick-releasable attaching means can be released and the weapon can be shifted simultaneously with one hand to a position for use with the butt end of the weapon against the wearer's shoulder and the arm of one hand cradled within a portion of said second strap section remote from the weapon.

4,331,272
FRAMELESS BACK PACK WITH TENT

Russell G. Ward, 2050 SW. 71st Ave., Portland, Oreg. 97225

Filed Jan. 29, 1981, Ser. No. 229,739
Int. Cl.[3] A47G *9/00*
U.S. Cl. 224—154 4 Claims

1. A frameless back pack comprising in combination,

a fabric sheet of substantially rectangular shape,

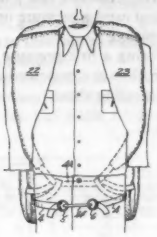
a tent canopy joined at its perimeter to the edges of said sheet,

sleeve means integral with the sheet,

webbing slidably in place within said sleeve means and having exposed segments, exposed webbing end segments having harness components thereon,

zipper halves in place on the sheet in juxtaposition with said sleeve means and serving to retain an overlapped portion of the sheet in folded back configuration, the overlapped folded back configuration of the sheet defining a load receiving area of the pack,

corner mounted zipper halves located at each edge of the corners at one end of the sheet enabling joining of the edges to form sleeve-like passageways for webbing segments,



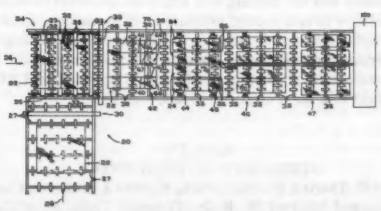
the folded back portion of the sheet adapted to overlie the user's back and hips, the sleeve-like passageways adapted to extend over the user's shoulders and thence downwardly to overlie the chest of the user, and

said exposed webbing segments comprising a harness for the pack, said harness including means coupling said harness components on the webbing end segments.

4,331,273
METHOD OF AND APPARATUS FOR SEVERING A GLASS SHEET

Charles J. Hyatt, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 27, 1980, Ser. No. 153,283
Int. Cl.[3] B26F *3/00*
U.S. Cl. 225—2 17 Claims



1. An apparatus for separating side edges of adjacent pieces advancing along a movement path, comprising:

at least one conveyor roll mounted in the movement path;

at least one spacing roll mounted in the movement path spaced from said at least one conveyor roll, said at least one spacing roll having a plurality of freely rotatable wheels mounted on a flexible shaft; and

means acting on said flexible shaft of said at least one spacing roll for adjusting the bow of said shaft relative to the movement path to separate side edges of adjacent pieces to be separated.

4,331,274
TRACKING SYSTEM

Harry J. Halewijn, Manchester, and Arnold H. Cohen, Andover, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Oct. 14, 1980, Ser. No. 195,894
Int. Cl.[3] B65H *25/26*
U.S. Cl. 226—15 17 Claims

1. An elongated sheet transport and guidance system comprising:

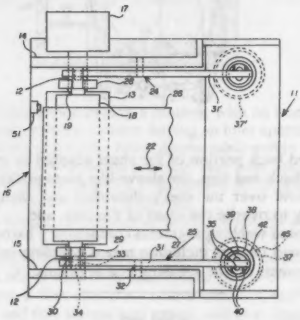
a frame means;

a drive roller mounted for rotation on said frame means and adapted to engage and frictionally drive the sheet along its longitudinal axes;

a drive means operatively coupled to said drive roller;

a pinch roller engaging said drive roller and mounted for rotation on an axis parallel thereto, said pinch and drive rollers arranged to straddle and exert a pressure on that portion of the sheet passing therebetween;

first means for inducing a first pressure level between said pinch and drive rollers in a region adjacent one longitudinal edge of the traveling sheet;



second means for inducing a second pressure level between said pinch and drive rollers in a region adjacent a longitudinal edge of the traveling sheet opposite to said one edge;

sensing means for sensing lateral displacement of the traveling sheet;

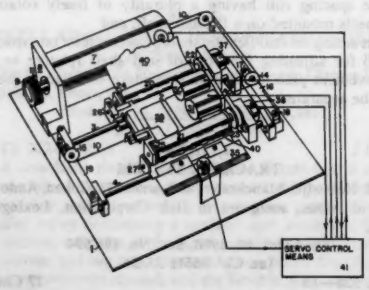
control means for varying the difference between said first and second pressure levels in response to said sensing means and for causing said first pressure level to increase relative to said second pressure level in response to lateral displacement of the sheet in one sense and for causing said second pressure level to increase relative to said first pressure level in response to lateral displacement of the sheet in a sense opposite to said one sense.

4,331,275

ORTHOGONAL FILM DRIVE

Robert D. Therien, Newbury Park; Edward J. Kraemer, Canoga Park, and Michael W. Rudy, Thousand Oaks, all of Calif., assignors to Terminal Data Corporation, Woodland Hills, Calif.

Filed Oct. 14, 1980, Ser. No. 196,245
Int. Cl.³ B65H *17/22, 25/26*
U.S. Cl. 226—188 **13 Claims**



1. Orthogonal film strip driving means, comprising;

(a) means **(20,21)** defining a film path, including means **(2)** for transversely moving said film strip **(40)**,

(b) means for tautly longitudinally translating said film strip **(20,21,30,31,77)** and for maintaining said film strip taut while said film strip is at rest,

(c) plural signal means **(37,38)** for electrically indicating the longitudinal position of said film strip coupled to said means for tautly longitudinally translating said film strip,

(d) electrical means **(45,46)** for generating one signal electrically indicating the longitudinal position of said film strip from plural signals of said plural signal means,

(e) electrical means **(61,63)** for determining the velocity of longitudinal motion of said film strips connected to said plural signal means, and

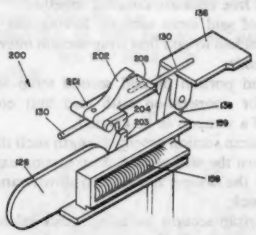
(f) electrical means **(61)** for determining the direction of longitudinal motion of said film strip connected to said electrical means to determine the velocity of motion of said film strip.

4,331,276

DISPENSING OF ATTACHMENT MEMBERS

Donald L. Bourque, Millis, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Sep. 7, 1979, Ser. No. 73,582
Int. Cl.³ B25L *1/02, 7/00*
U.S. Cl. 227—8 **12 Claims**



1. Apparatus for dispensing attachment members, each being formed by a filament with a head at one end and a cross bar at the other end and being moved into position for being dispensed, comprising

means having forward and return strokes for ejecting an attachment member from the apparatus during a forward stroke, and antijam means for preventing the premature operation of the ejecting means.

4,331,277

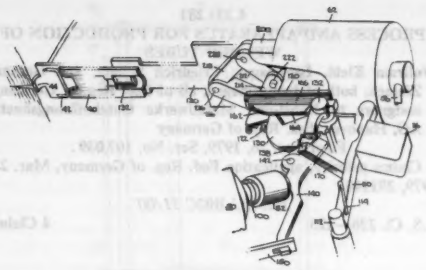
SELF-CONTAINED GAS POWERED SURGICAL STAPLER

David Y. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed May 23, 1980, Ser. No. 152,758
Int. Cl.³ B25C *5/04*; A61B *17/04*
U.S. Cl. 227—19 **40 Claims**

1. Improved gas powered surgical stapling apparatus including a pneumatic piston and a longitudinally reciprocal staple driver for both advancing a staple to a staple forming position and then forming the staple, the staple moving directly with the staple driver during advance of the staple and being bent directly by further motion of the staple driver during forming of the staple, wherein the improvement comprises a mechanical linkage between the pneumatic piston and the staple driver for causing the staple driver to advance more rapidly than the pneumatic piston during the advance of the staple to the staple forming position and for causing the staple driver to advance more slowly than the pneumatic piston during forming of the staple, the mechanical linkage applying a smaller force to the staple driver than the output force of the pneumatic piston while the staple driver is advancing more rapidly than the

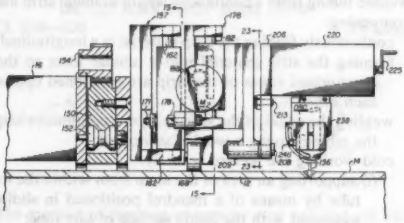
pneumatic piston, and the mechanical linkage applying a larger force to the staple driver than the output force of the pneumatic piston while the staple driver is advancing more slowly than the pneumatic piston.



4,331,278
PIPE WELDING APPARATUS

Charles R. Sherer, and William R. Mercer, both of 5121 Steadmont, Houston, Tex. 77040

Continuation of Ser. No. 895,119, Apr. 10, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,778
Int. Cl.³ B23K 37/02
U.S. Cl. 228—29 25 Claims

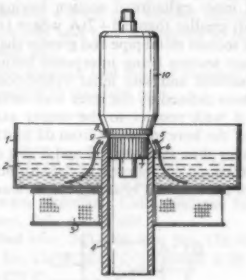


1. Pipe welding apparatus, comprising:
a frame having means for fixedly clamping it concentrically about the pipe,
a ring mounted on the frame for rotation coaxially about the pipe,
means for moving the ring about the pipe,
a welding head mounted on the ring for movement therewith about the pipe, comprising:
a gauge wheel,
means mounting the gauge wheel for rotation,
means for mounting the gauge wheel mounting means for rotation with the ring in a generally parallel plane a fixed distance from the rotational plane of the ring,
means for yieldably urging the gauge wheel mounting means inwardly to force the gauge wheel against the pipe so that the gauge wheel mounting means will follow the contour of the pipe as the head rotates with the ring,
a welding torch having a tip mounted with the gauge wheel mounting means for movement in an imaginary plane which lies through the axis of the pipe and the wheel pipe engaging location, and
power energized means mounted with the gauge wheel mounting means for adjusting the tip radially and axially of the pipe axis in the imaginary plane, whereby the gauge wheel moves the tip and tip adjusting means radially of the pipe axis in response to out-of-roundness of the pipe as the gauge wheel is rotated about the pipe and the tip may be adjusted axially and radially of the pipe axis independently of the gauge wheel.

4,331,279
APPARATUS FOR SOLDERING THE COIL OF AN ELECTRIC MACHINE TO ITS COLLECTOR

Pavel M. Minchev; Hristomir D. Hristov; Stoyan R. Lazarov; Stoimen S. Balinov, and Nikolay V. Yordanov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Jun. 30, 1980, Ser. No. 164,001
Claims priority, application Bulgaria, Jun. 28, 1979, 44122
Int. Cl.³ B23K 37/06
U.S. Cl. 228—37 4 Claims



1. An apparatus for soldering the wires of the coil of an armature of an electric machine to the commutator thereof, comprising a pan containing molten solder, a monophase hydro-dynamic magnetic pump acting upon the molten solder, the pump having a vertically disposed magnetic core in the shape of a cylinder having a passage therein, the core having an externally chamfered upper end, the upper end of the passage in the core receiving the lower end of an armature there within with a first portion of the commutator on the armature disposed within the upper end of the passage in the core and a second portion of the armature with wires from the coil leading thereto disposed above the upper end of the core, an annular heat-resistant gasket disposed on the commutator between the first and second portions thereof and effecting a seal between the first portion of the commutator and the core, an annular charger surrounding the core disposed in the pan coaxial of the core, the charger having a lower end disposed above the bottom of the pan and a frusto-conical upper end cooperating with the chamfered upper end of the core to form with the chamfered upper end of the core a frusto-conical annular channel which discharges molten solder from its upper end unto the second portion of the commutator and the part of the wires adjacent thereto whereby to solder the wires to the commutator.

4,331,280
METHOD OF JOINTING PIPES BY FRICTION WELDING

Takao Terabayashi, Yokohama; Kenichi Waragai, Fujisawa; Atsuya Kamada, Kamakura; Masaru Kobayashi, Tokyo; Izumi Ochiai, Tochigi, and Yoiti Wakabayashi, Sano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

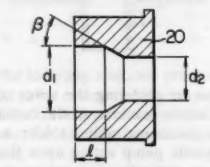
Continuation of Ser. No. 59,736, Jul. 23, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,369
Claims priority, application Japan, Jul. 24, 1978, 53-89461
Int. Cl.³ B23K 20/14
U.S. Cl. 228—112 7 Claims

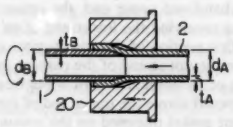
1. A method of joining metal pipes by friction welding in which a first metal pipe and a second metal pipe are welded together at their end portions, said second metal pipe having an inner diameter equal to or greater than the inner diameter of

the first metal pipe and smaller than the outer diameter dB of the first metal pipe, comprising the steps of;

forming a tapering surface section on the outer wall surface of the forward end portion of the first metal pipe, said tapering surface section being contiguous with a straight surface section and inclined at an angle α with respect to the center axis and having a predetermined length from its starting point to its terminating point so that the forward end of the first metal pipe to be joined has an outer diameter equal to or smaller than the inner diameter of the forward end portion of the second metal pipe, and preparing a ring made of a heat insulating material including a pipe inserting section, an inner cylindrical section and an intermediate section, said pipe inserting section having a bore of a diameter d2 substantially equal to or slightly greater than the outer diameter dA of the second metal pipe, said inner cylindrical section having a bore of a diameter d_1 smaller than $dB+2tA$ where tA is the thickness of the second metal pipe and greater than dB, and said intermediate section being interposed between said pipe inserting section and said inner cylindrical section and having a bore defined by the inner wall surface inclined at an angle β with respect to the center axis so that the diameter of the bore increases from d2 to d1, said angle α being smaller than said angle β and $8° \leqq \alpha < \beta \leqq 30°$;

placing the forward end portion of the second metal pipe in the bore of the ring and bringing the forward end portion





of the second metal pipe into juxtaposed relation on the center axis to the forward end portion of the first metal pipe formed with the tapering surface section in the first step;

moving the first metal pipe and the second metal pipe axially into engagement while rotating same about the center axis relative to each other and pressing same against each other to expand the forward end portion of the second metal pipe by the tapering surface section of the first metal pipe, further pressing same against each other to continue the expansion to cause the forward end of the second metal pipe to slip into a gap between the inner wall surface of the inner cylindrical section of the ring and the outer wall surface of the first metal pipe and further pressing same against each other until the second metal pipe is brought into contact with the minimum diameter portion of the tapering inner wall surface of the intermediate section of the ring to fill a gap between the first metal pipe and the ring, so that the tapering surface section and the straight surface section of the outer wall surface of the forward end portion of the first metal pipe and the inner wall surface of the forward end portion of the second metal pipe can be welded together as they are heated by the heat of rotational friction while the outer wall surface of the second metal pipe is being supported by the ring; and

ceasing movement and rotation of the second metal pipe and the first metal pipe and cooling same prior to removal of the ring from the second metal pipe welded to the first metal pipe.

4,331,281

PROCESS AND APPARATUS FOR PRODUCTION OF WELDED TUBES

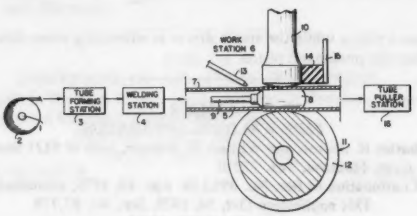
Wolfram Klebl, Isernhagen; Friedrich Schatz, and Gerhard Ziemek, both of Langenhagen, all of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette AG, Hanover, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,039

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911403

Int. Cl.³ B02C *31/00*

U.S. Cl. 228—125 **4 Claims**



1. An improved process for the continuous production of welded tubing from a continuous length of metal strip material comprising:

continuously feeding the strip material in a longitudinal path;

forming the strip material into a tubular form so that the longitudinal edges of the strip are positioned opposite to each other;

welding the edges of the strip to form a continuous length of the tubing having a welded seam; and

cold working the welded seam by:

(i) supporting an area of the seam from within the formed tube by means of a mandrel positioned in sliding engagement with the inside surface of said tube;

(ii) applying a force to an area of the outside surface of the seam for urging the cold seam toward said supported area of the seam; and

(iii) supporting the formed tube by

a lower roller acting against the outside surface of said tubing; the improvement comprising:

said step of applying a force providing a high frequency pulsating force to each area of the seam; and

said step of supporting an area of the seam including a widening of the seam immediately prior to the application of said pulsating force.

4,331,282

METHOD OF MANUFACTURING GLAZING PANELS

Theo Janssens, Mol, and Victor Willems, Retie, both of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Aug. 6, 1979, Ser. No. 64,526

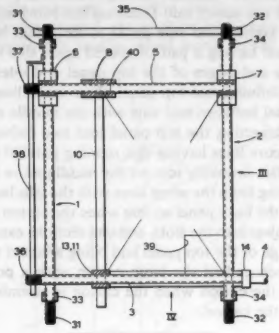
Claims priority, application United Kingdom, Aug. 11, 1978, 33135/78

Int. Cl.³ B23K *1/02, 1/18*

U.S. Cl. 228—124 **6 Claims**

1. In the manufacture of glazing panels comprising sheets marginally bonded together, a method for effecting bonding by means of solder between at least two of said sheets and at least one metallic spacer member assembled in marginal contact with said sheets and intervening between said sheets, to form an assembly, comprising: bringing the assembly within the effective sphere of operation of a treatment means which is carried by a frame and causing said treatment means to act

simultaneously on each side margin of the assembly around the whole margin of the assembly while said assembly is stationary



with respect to said frame, to bond said assembly together by melting said solder.

4,331,283

METAL CLADDING

Malcolm J. Fraser, Upper St. Clair Township, Allegheny County, Pa., assignor to Copperweld Corporation, Pittsburgh, Pa.

Filed Jun. 27, 1979, Ser. No. 52,624
Int. Cl.³ B23K *20/04;* B21D *29/04*
U.S. Cl. 228—130 **3 Claims**

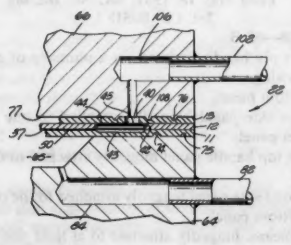
1. The method of forming composite clad rod and the like having substantially uniform thickness of cladding material which comprises rolling a plurality of cladding strips having a "bow-tie" and the like cross section onto a circular core rod.

4,331,284

METHOD OF MAKING DIFFUSION BONDED AND SUPERPLASTICALLY FORMED STRUCTURES

David W. Schulz, Hermosa Beach, and Vene L. Darby, Redondo Beach, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 14, 1980, Ser. No. 130,505
Int. Cl.³ B23K *20/14, 20/22*
U.S. Cl. 228—157 **4 Claims**



1. In the method of making a metallic sandwich structure from three workpieces in a stack by selectively diffusion bonding first portions of said stack, clamping said stack at its periphery between first and second forming members, and superplastically forming second portions of said stack by the application of fluid under pressure, the improvement comprising:

providing a first port at said periphery of said stack through one outer workpiece of said stack;

providing at least one stopoff path coupling said first port to said second portions of said stack;

providing a slot in the inner workpiece of said stack coupling said first port to said at least one stopoff path;

providing a second port in said first forming member coupling said first port to said fluid under pressure;

providing a seal between said first forming member and said one outer workpiece sealing off said first and second ports;

providing a tubular member within said slot, said tubular member having a bore, said tubular member being positioned such that said bore is coupled to said at least one stopoff path; and

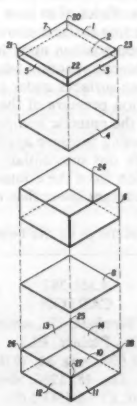
making a hole through said tubular member such that said bore is coupled to said first port.

4,331,285

METHOD FOR FABRICATING A MAGNETIC SHIELDING ENCLOSURE

David F. Gottwals, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 24, 1980, Ser. No. 132,748
Int. Cl.³ B23K *11/10;* H05K *9/00*
U.S. Cl. 228—173 C **5 Claims**



1. A method of fabricating a magnetic shield enclosure of magnetically permeable material such as mu-metal comprising the steps of:

providing a first sheet of magnetically permeable material having a rectangular configuration with side flaps extending therefrom, and folding said flaps at right angles to said first sheet to form a container having a gap between each adjacent side;

providing a second piece of magnetically permeable material having said rectangular configuration and with side flaps extending therefrom, and folding said flaps at right angles to said second sheet to form a lid having a gap between each adjacent side;

providing a third piece of magnetically permeable material having a length substantially equal to the inside periphery of said container and a width substantially equal to the combined heights of said container and lid;

folding said third piece at four locations spaced along its length such that it substantially conforms to the inside

periphery of said container with a gap disposed along one side; and

inserting said third piece within said container and lid to complete an enclosure wherein the gaps of said container and lid are non-coincident with the gap of said third piece.

4,331,286

METHOD FOR PRESSURE BONDING METAL MEMBERS BY UTILIZING EUTECTIC REACTION

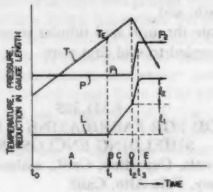
Kunio Miyazaki; Takeo Tamamura, both of Hitachi; Tomio Iizuka, Tokaimura; Hitoshi Suzuki, Hitachi, and Izumi Ochiai, Ohiramachi all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,837

Claims priority, application Japan, Apr. 10, 1978, 53-41186

Int. Cl.³ B23K *20/00, 20/22*

U.S. Cl. 228—198 **20 Claims**



1. A method for pressure bonding metal members which comprises the steps of:

forming contacting surfaces of at least two metal members, wherein the contacting surfaces contain an element which forms a eutectic composition upon heating to a temperature at which a eutectic reaction takes place,

heating the contacting surfaces under a pressure lower than a plastic deformation pressure of the members for a time sufficient to form the eutectic composition,

increasing the contacting pressure applied to the contacting surfaces to squeeze out substantially all of the liquid of eutectic composition from the contacting surfaces before the temperature becomes lower than eutectic temperature, and

cooling the bonded surfaces of the two members.

4,331,287

CARTON

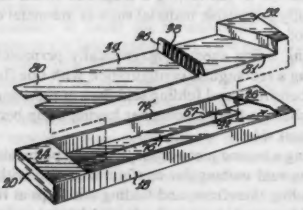
Paul B. Wharton, Jr., Deerfield, Ill., assignor to Kinetics Container Corporation, Des Plaines, Ill.

Division of Ser. No. 938,634, Aug. 31, 1978, Pat. No. 4,197,788.

This application Jan. 18, 1980, Ser. No. 115,091

Int. Cl.³ B65D *5/00*

U.S. Cl. 229—16 D **5 Claims**



1. A box blank for assembly into a display carton having a relatively long depth, a relatively short length and a medium width, a back panel, a fastening tab connected to said back panel along a score line, a first side panel connected along a score line with the opposite edge of said back panel, slots formed in said back panel with one edge of each slot aligning with one of the score lines along the edges of said back panel, a top panel connected to said first side panel along a score line, a second side panel connected along a score line to the opposite edge of said top panel, said fastening tab being adapted to be fastened to said second side panel to form said basic carton, said top panel having a pair of spaced apart slits spaced from the opposite end edges of the top panel and intersecting the score lines defining said top panel, three score lines formed in said top panel between said slits with the middle of said three score lines bisecting the top panel into two halves, said two remaining score lines having slits running parallel to the score lines and offset inwardly toward the middle score line to form tabs projecting from the score lines with the tabs lining up with said slots in the back panel so that when the carton is set up the tabs will project into the slots, and end sections extending from each end edge of the top panel and being adapted to be folded over the open end of the basic carton with a portion being tucked into the carton when the carton is assembled to form the ends of the carton.

4,331,288

PACKING CONTAINER

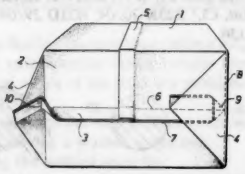
Stig A. Löthman, Veberöd, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Aug. 11, 1980, Ser. No. 176,976

Claims priority, application Sweden, Aug. 22, 1979, 7907000

Int. Cl.³ B65D *5/72*

U.S. Cl. 229—17 R **4 Claims**



1. A packing container, comprising a sealing fin along which material layers forming the packing container are joined to one another, said sealing fin extending both over a wall of the packing container and over a corner lug adjoining said wall, said corner lug being adapted to be folded back against said wall, a portion of the sealing fin extending over the packing container wall being folded down against the wall in one direction and, a portion of the sealing fin extending over the corner lug being folded down in the opposite direction.

4,331,289

FOUR-PLY HANDLED CARTON

Earl J. Killy, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Filed May 13, 1981, Ser. No. 262,885

Int. Cl.³ B65D *5/46*

U.S. Cl. 229—52 B **7 Claims**

1. A four-ply handled carton for a plurality of cans or bottles, comprising:

(a) a bottom panel;

(b) a first side panel hingedly attached to one side of the bottom panel;

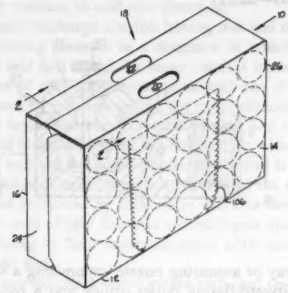
(c) a first top handle panel hingedly attached to the first side panel;

(d) a second side panel hingedly attached to the other side of the bottom panel;

(e) flap means, hingedly attached to at least one of the panels, for closing the ends of the carton;

(f) a second top handle panel hingedly attached to the second side panel;

(g) a third top handle panel hingedly attached to the second top handle panel;
(h) a fourth top handle panel formed partly out of the second top handle and partly out of the third top handle panel and hingedly attached to one of the handle panels;
(i) the fourth top handle panel being folded against and



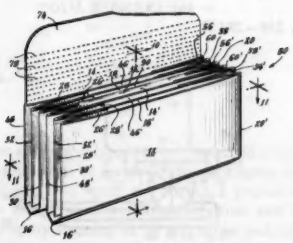
adhesively secured to the second top handle panel and the third top handle panel being folded against and adhesively secured partly to the fourth top handle panel and partly to the second top handle panel; and
(j) the first top handle panel being adhesively secured to one of the top handle panels thereby forming a four-ply handle panel structure on the top of the carton.

4,331,290

MULTIPLE POCKET, EXPANDABLE ENVELOPE, AND BLANK AND METHOD FOR FORMING SAME

Albert A. Benham, Granville, Mass., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 18, 1980, Ser. No. 188,366
Int. Cl.³ B65D *27/08*
U.S. Cl. 229—72 **12 Claims**



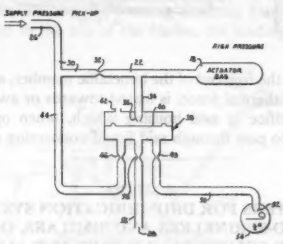
1. A multiple pocket, expandable envelope formed from a planar, unitary blank, comprising at least two pair of:
(a) front and back panels having opposed end edges and opposed first and second side edges and being hingedly coupled at adjacent end edges thereof along a fold line;
(b) front and back divider panels each having opposed first and second side edges and opposed first and second surfaces, said front and back divider panels hingedly coupled at said first side edges thereof to said front and back panels, respectively, at said first side edges thereof along fold lines;
(c) first means hingedly coupling said front panel at said second side edge thereof to said front divider panel;
(d) second means hingedly coupling said front and back divider panels; and
(e) third means hingedly coupling said back panel at said second side edge thereof to said back divider panel; the front panel of one of said pairs being hingedly coupled along a common end edge fold line to the back panel of the other of said pair.

4,331,291

PNEUMATIC CONTROL CIRCUIT FOR AIR DISTRIBUTION SYSTEMS

Raymond H. Dean, Johnson County, Kans., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Oct. 14, 1980, Ser. No. 196,668
Int. Cl.³ F24F *7/04*
U.S. Cl. 236—49 **11 Claims**



1. In an air distribution system for applying conditioned air to an area, the combination of:
a duct adapted to receive conditioned air at a relatively high supply pressure, said duct having an outlet for discharging conditioned air at a relatively low pressure to said area;
pressure responsive actuator means for controlling the flow of conditioned air through said outlet, said actuator means being in communication with a pressure source and acting in response to the pressure therefrom in a manner to reduce the flow through said outlet;
an exhaust line communicating with said actuator means for bleeding pressure therefrom to increase the flow through said outlet, said exhaust line having a control orifice therein;
a diaphragm for opening and closing said control orifice to control the condition of said actuator means, said diaphragm having one side adjacent said control orifice and an opposite side communicating with said supply pressure;
a velocity sensor for sensing the flow through said outlet, said sensor communicating with said opposite side of the diaphragm to urge same toward the control orifice in cooperation with the supply pressure; and
temperature responsive thermostat means for bleeding pressure from said opposite side of the diaphragm at a preselected temperature in said area, thereby opening said control orifice to bleed pressure from said actuator means for increased flow of conditioned air through said outlet.

4,331,292

INSTANT HOT WATER SUPPLY SYSTEM

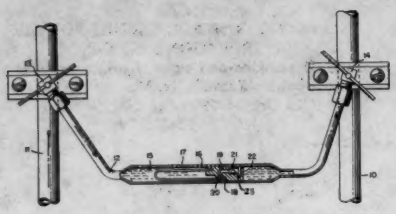
Eric H. Zimmer, Scenic Dr., R.D. 2, Box 645, Newton, N.J. 07860

Filed Aug. 29, 1980, Ser. No. 182,588
Int. Cl.³ F24D *3/08*; F24H *1/22*
U.S. Cl. 237—19 **11 Claims**

1. An instant hot water supply system comprising:
(a) cold water supply means,
(b) hot water supply means,
(c) liquid connecting means between the cold water supply means and the hot water supply means in the vicinity of an exit for the hot water supply means,
(d) which liquid connecting means includes a thermostatic control means for regulating the flow of liquid of varying temperature therethrough, which thermostatic control means comprises

(e) a housing adapted to contain one end of

(f) a U-shaped bimetallic member which is responsive to thermal force from a liquid and is positioned and adapted



so that the free end of the bimetallic member, as a function of said thermal force, is biased towards or away from

(g) an orifice in said housing which, when open, allows liquid to pass through said liquid connecting means.

4,331,293

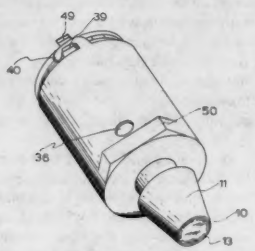
EMITTERS FOR DRIP IRRIGATION SYSTEMS, MICRO-SPRINKLERS AND SIMILARS, OF THE PRESSURE COMPENSATING TYPE AND ALSO THOSE TYPES WHOSE FLOW VARIES IN RELATION TO THE CHANGES IN PRESSURE

Javier Rangel-Garza, Rio Danubio #117 Col. Del Valle, Garza Garcia, Nuevo Leon, Mexico

Filed Nov. 23, 1979, Ser. No. 96,751

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—542 **7 Claims**



1. An emitter for discharging fluid from a conduit conveying fluid in an irrigation system, said emitter comprising a male section and a female section, said female section having a pivot insertable in said conduit with a passageway in said pivot providing for fluid communication between said conduit and emitter, a rod extending from said male section into said passageway and being formed to provide restricted passage of fluid from said conduit into said emitter so as to impede the passage of particles suspended in said fluid, a first decompression chamber formed between the male section and the female section and communicating with said passageway, a second decompression chamber in fluid communication with said first decompression chamber, means to create a cyclone like turbulence in the fluid flowing into said chambers, a particle collecting chamber formed around the periphery of said emitter, an opening providing for communication between said particle collecting chamber and said second decompression chamber, said opening being sized to permit the passage of particles from said second decompression chamber into said collecting chamber, an opening formed in the body of said emitter to provide for exit of particles from said particle collecting chamber, manually operable means to selectively provide for exit of said particles from the collecting chamber, and means combined with said male and female sections providing for discharge of fluid from said emitter.

4,331,294

SPRAY OR ATOMIZING NOZZLE

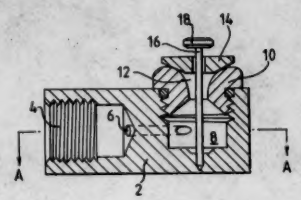
Yigal Gilad, Tel Aviv, Israel, assignor to Irritech, Advanced Irrigation Technologies, Tel Aviv, Israel

Filed Oct. 18, 1979, Ser. No. 86,065

Claims priority, application Israel, Oct. 30, 1979, 55827

Int. Cl.³ B05B *1/26*

U.S. Cl. 239—222.17 **12 Claims**



1. A spray or atomizing nozzle, comprising a vortex chamber, an outward-flaring outlet orifice and a rotatable spray-control body, which spray-control body, in the non-operative state of said nozzle, rests on the flaring rim of said outlet orifice, while in the operative state said spray-control body, being impacted by the liquid issuing from said outlet orifice, is slightly lifted off the flaring rim of said outlet orifice, facilitates deflection of the impacting liquid outwards, produces a droplet spraying effect and, due to the negative-pressure zone created in said vortex chamber, is maintained floating in a position of equilibrium at a close distance from said orifice rim, whereby the droplet-size spectrum of said spray is controlled.

4,331,295

WINDSHIELD WASHER

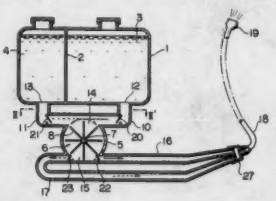
Hisanori Warihashi, 43-4, Daita 1-chome, Setagaya-ku, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,288

Claims priority, application Japan, Apr. 27, 1979, 54/55850[U]

Int. Cl.³ B05B *1/10*

U.S. Cl. 239—284 R **8 Claims**



1. A windshield washer comprising:

a jet nozzle member adapted for ejecting a washing liquid to the surface of a windshield;

a first reservoir for containing a first liquid;

a second reservoir for containing a second liquid;

a pump unit having a cylindrical housing member, a rotor member reversibly rotatably arranged within said housing member and so constructed that the rotation thereof causes the liquid within said housing member to whirl in a vortex pattern along the inner periphery of said housing member in the same direction as the rotation of said rotor member, and a drive means for rotating said rotor member selectively in a forward or reverse direction;

a first liquid feed conduit extending between the first reservoir and said housing member and opening into said housing member in a direction in which the liquid within said first liquid feed conduit is suctioned by rotation in one

direction of said rotor member and pressurized by rotation in the other direction;

a second liquid feed conduit extending between the second reservoir and said housing member and opening into said housing member in a direction in which the liquid within said second liquid feed conduit is suctioned by rotation of said rotor member in said the other direction and pressurized by rotation in said one direction;

a first liquid discharge conduit having one end opening into said housing member in a direction in which the liquid within said first liquid discharge conduit is pressurized by rotation of said rotor member in said one direction and suctioned by rotation in said the other direction;

a second liquid discharge conduit having one end opening into said housing member in a direction in which the liquid within said second liquid discharge conduit is pressurized by rotation of said rotor member in said the other direction and suctioned by rotation in said one direction;

the other ends of said first and second liquid discharge conduits being in fluid communication with said jet nozzle member; and

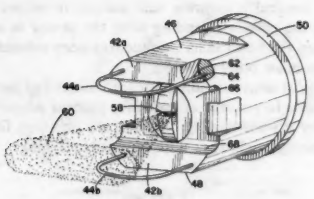
first and second check valve means provided respectively in said first and second liquid feed conduits for preventing liquid flows therethrough toward said first and second reservoirs, respectively, whereby said first or second liquid is selectively fed by rotation of said rotor member in said one or other direction to said jet nozzle for ejection as said washing liquid.

4,331,296

AIRLESS SPRAY TIP

Gustave S. Levey, Houston, Tex., assignor to Speeflo Manufacturing Corporation, Houston, Tex.

Filed Mar. 17, 1980, Ser. No. 130,606
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—288 **21 Claims**



1. An airless spray tip adapted to be connected at its inlet end to a source of liquid to be sprayed through a spray opening at its discharge end, said spray tip having a protective guard comprising a frame structure extending from said spray tip adjacent said spray opening at its discharge end, said frame structure having a maximum lateral dimension substantially equal to or less than that of said spray tip and defining a three-dimensional space of sufficient dimension as measured from the spray opening to prevent the injection of human skin pressed against said guard by liquid being sprayed, and said frame structure permitting the substantially unrestricted flow of atomization air into said space.

4,331,297

WATER SPRAY ATTACHMENT FOR CONCRETE FINISHING MACHINE

Wyllie T. Gipson, 1917 N. Minnesota, Wichita, Kans. 67214

Filed Jul. 10, 1980, Ser. No. 167,248
Int. Cl.³ B05B *9/043*
U.S. Cl. 239—289 **1 Claim**

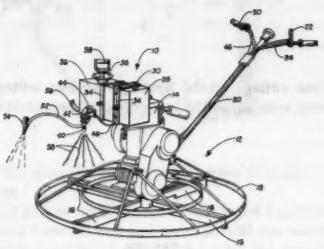
1. An improved water spray apparatus for attachment to a concrete finishing machine having rotating finishing blades, the apparatus comprising:

a water tank adapted for attachment to the top of the finishing machine;

a fuel tank releasably attached to one side of the water tank;

a hand operated water pump relesably attached to the top of the water tank for pressurizing the water in the tank, the hand operated water pump acts as a cap on top of the water tank, by removing the pump the opening in the top of the water tank is used for filling the tank with water;

a water tank spray nozzle attached to the bottom of the water tank for spraying water in a circular pattern adjacent the inside of the finishing blades outwardly to the outside of the finishing blades and the periphery of the area finished by the rotating finishing blades, the water applied to the top of the blades, the leading edge of the



blades and onto the freshly poured concrete as the concrete is finished by the finishing machine;

a water valve communicably connected between the water tank and the water tank spray nozzle;

a cable having one end attached to the water valve;

a water spray lever attached to the other end of the cable and adapted for attachment to the concrete finishing machine, by rotating the water spray lever, the water valve is opened and closed;

a water hose having one end attached to the water tank, the other end attached to a water hose spray nozzle for spraying concrete adjacent the concrete finishing machine; and

a water hose carrier attached to the side of the water tank so the water hose may be coiled therearound when the water hose is not required.

4,331,298

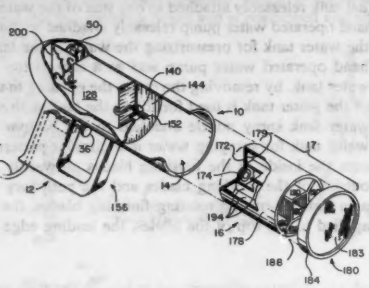
HAND-HELD COATING-DISPENSING APPARATUS

Stanley L. Bentley, and David G. Jessup, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Division of Ser. No. 773,520, Mar. 2, 1977, Pat. No. 4,165,022.
This application Apr. 9, 1979, Ser. No. 28,278
The portion of the term of this patent subsequent to Jun. 27, 1997, has been disclaimed.
Int. Cl.³ B05B *5/00*
U.S. Cl. 239—690 **14 Claims**

1. An electrostatic coating-dispensing apparatus comprising a hand-held housing, means for supplying coating to be dispensed to the housing, a source of low voltage direct current, the low voltage direct current source being housed in the housing, means for providing control signals, means for coupling the control signal providing means to the low voltage direct current source, said control signal providing means being responsive to the low voltage direct current, means for switching the low voltage direct current in response to such control signals, means for coupling the switching means to the low voltage direct current source, means for boosting the switched low voltage, means for coupling the boost means to the switching means, means for rectifying the boosted voltage, means for coupling the rectifying means to the boost means, an electrode for supplying the rectified and boosted voltage to the

coating to be dispensed, means for coupling the electrode to the rectifying means, and means for supplying alternating



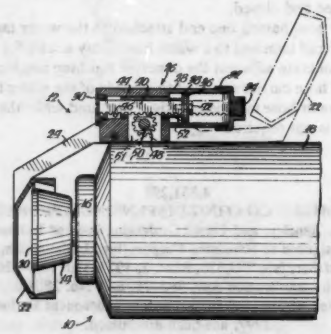
current line voltage to the housing, the line voltage supply means being coupled to the low voltage direct current source.

4,331,299

SAFETY COVER FOR ROTARY HEAD ELECTROSTATIC SPRAY COATING SYSTEMS

Samuel W. Culbertson, Arvada; Charles W. McCulloch, Westminster, and Keith G. Williams, Boulder, all of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jun. 26, 1980, Ser. No. 163,151
Int. Cl.³ B05B *5/04*
U.S. Cl. 239—691 **10 Claims**



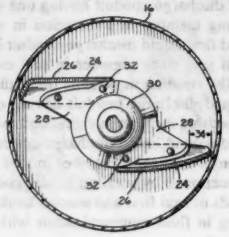
1. In combination with a rotary head electrostatic spray coating apparatus of the type to which a rapid rotation is imparted by motor means to a rotary spray head onto which coating material is introduced for discharge of the material in a spray from a peripheral edge of the head for deposit on an article, a safety cover assembly comprising a shroud having front and side walls and an opening to the interior thereof, said front wall defining a closed end of said shroud opposite from said opening; and means for moving said shroud between a position remote from the spray away from an article onto which coating material is to be deposited and a position about the head with at least the peripheral edge of the head received within said opening and enclosed by said front and side walls, so that when said shroud is about the head nearby personnel are protected against contact with the peripheral edge of the rotary head.

4,331,300

ROTARY CUTTER BLADE

William R. Hicks, Spencerport, and Bhim S. Madan, Brockport, both of N.Y., assignors to General Electric Company, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,312
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—282.1 **5 Claims**



1. A rotary cutter blade assembly for use in an unfluted constant diameter bowl of a motor driven food processor with a rotatable hub mounted on a vertically oriented drive shaft and with the bowl being closed by a cover with an opening therein for feeding material to the bowl, the assembly comprising,

a pair of generally parallel straight razor blade-type cutters extending oppositely away from the hub,

said cutters terminating closely adjacent the bowl inner surface,

a pair of generally parallel straight integral support arms with a tapered leading edge and tip said arms being vertically spaced and extending oppositely away from said hub,

means integrally securing said cutters to respective arms with the cutters extending from the center of shaft rotation to the bowl inner surface to sweep substantially the entire inner bowl diameter,

the support arms extending over at least half of the length of its blade to provide at least fifty percent support thereof,

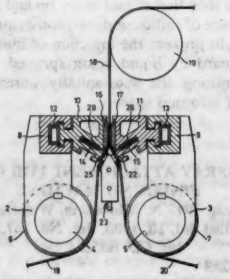
whereby a wide variety of foods are chopped finer, more uniformly, and faster with reduced splashing.

4,331,301

AUTOMATIC SPLICING SYSTEMS OF ROLLED BELTS OR PAPER COILS

Manuel T. Martinez, Sancho el Fuerte, 21-8° Pamplona, Spain

Filed Aug. 8, 1980, Ser. No. 176,495
Int. Cl.³ B65H *19/18*
U.S. Cl. 242—58.1 **7 Claims**



1. Apparatus for splicing a free end of a first belt from a

rolled coil to a second belt of an operating coil for forming a continuous belt comprising:

(a) first and second shafts having first and second rollers mounted respectively thereon for receiving said first and second belts therebetween and for guiding said belts thereon;

(b) first and second sections respectively rotatably mounted on said first and second shafts;

(c) each said section including a floating assembly floatingly mounted thereon, said floating assembly having an elastic edge thereon;

(d) each said floating assembly being disposed on the corresponding section such that when said sections are rotated relative to one another, the elastic edges of said floating assemblies are impactingly abuttable whereby the belts are trapped between said elastic edges for adhering said first belt to said second belt; and

(e) first and second cutting means disposed respectively on said floating assemblies for cutting an end of said second belt of said operating coil at a point adjacent said elastic edges whereby there is no free portion of said second belt remaining after affixing said free end of said first belt.

4,331,302

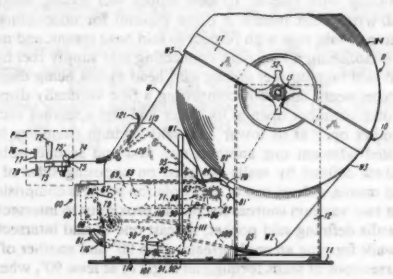
WEB FEEDING METHOD AND APPARATUS FOR A PRINTER

David J. Ivary, Costa Mesa, Calif., and Raymond L. Kirby, Jr., Vandalia, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed May 20, 1980, Ser. No. 152,057

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—71.9 **4 Claims**



1. A reel assembly for holding rolls of web material of a variety of selected widths, comprising: a shaft, a reel mounted on the shaft, the reel having a hub adapted to receive a roll of web material, a first side member disposed at one side of the hub, a second side member disposed at the other side of the hub and mounted for axial sliding movement on the shaft to enable the second side member to accommodate rolls of different widths, means for releasably clutching the second side member to the shaft at a selected position along the shaft, and the clutching means including a manually movable member and resilient means responsive to movement of the manually engageable member for effecting clutching and unclutching.

4,331,303

TWO PART FRONT COVER FOR SPIN CAST REELS

Elvis W. Moss, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,921

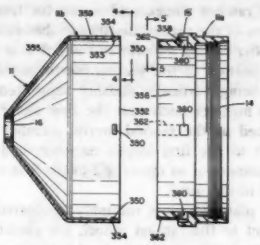
Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 A **3 Claims**

1. In a spin casting type fishing reel having an internal mechanism including a spool assembly, a reel body, a spinner head assembly, and an anti-reverse assembly, the improved housing comprising:

a rear cover having a stem and mounting foot thereon for mounting to a fishing rod;

a first part of a front cover, the first part being cylindrical with a front and rear edge, the front edge including two cylindrical flanges forming an annular groove therebetween, one of the flanges having circumferentially spaced apart cutouts therein;



means for securing the rear edge of the first part to the rear cover;

a second part of the front cover, the second part including a conical forward end and a cylindrical rearward end, the rearward end being receivable within the annular groove of the first part and having spaced apart tabs receivable within the cutouts when the rearward cylindrical portion is in the annular groove, thereby preventing the first and second parts from being pulled apart.

4,331,304

EMERGENCY LOCK TYPE RETRACTOR

Hideoki Matsuoka, Yokohama, and Yoshimi Yamamoto, Shizuoka, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Sep. 8, 1980, Ser. No. 184,743

Claims priority, application Japan, Sep. 12, 1979, 54-126772[U]

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **5 Claims**

1. An emergency lock type retractor for a passive seat belt assembly of a vehicle including a housing mounted on a vehicle body, a reel rotatably supported by the housing and urged in a direction in which the seat belt is retracted and wound about the reel, a ratchet wheel fixedly secured to the reel, a pawl supported by the housing and normally kept disengaged from the ratchet wheel, and actuating means responsive to acceleration or deceleration of the vehicle, said actuating means establishing an engagement of the pawl with the ratchet wheel when the rate of acceleration or deceleration of the vehicle exceeds a predetermined level so as to prevent unwinding of the belt from the reel, wherein said actuating means comprises:

a first inertia member perpendicularly suspended by the housing and adapted to swing with respect to the housing

as the mounting angle of the housing with respect to the vehicle body varies;

a second inertia member which is more sensitive to the acceleration or deceleration of the vehicle than the first inertia member, and which is supported by the first inertia member movably with respect to the first inertia member; and

means for transmitting to the pawl the movement of the second inertia member with respect to the first inertia member such that the pawl is displaced into engagement with the ratchet wheel, said means for transmitting the movement of the second inertia member including:

a first slider having a lower end which is in contact with a top portion of the second inertia member, the first slider being vertically slidably supported by the first inertia member such that the first slider is vertically displaced as the second inertia member moves with respect to the first inertia member, and the vertical displacement of an upper end of the first slider is transmitted to the pawl;

a clutch plate which is rotatably supported by the reel adjacent to the ratchet wheel, the clutch plate being connected to the ratchet wheel as the upper end of the first slider displaces vertically upwards to thereby engage the pawl with the ratchet wheel; and

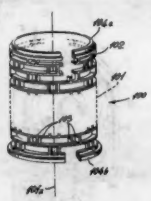
a second slider having a lower end which is in contact with the upper end of the first slider, the second slider being supported by the clutch plate radially slidably with respect thereto and provided with a claw, the second slider being displaced radially inwards with respect to the clutch plate as the first slider displaces vertically upwards such that the claw is engaged with the ratchet wheel to connect the clutch plate with the ratchet wheel.

4,331,305

RIGID AND COMPRESSIBLE DYE TUBES

Robert P. Marquis, Bromont, and Peter Weileder, West-Brome, both of Canada, assignors to Plastech Inc., Cowansville, Canada

Filed Sep. 25, 1980, Ser. No. 190,601
Int. Cl.[3] B65H *75/20*
U.S. Cl. 242—118.11 15 Claims



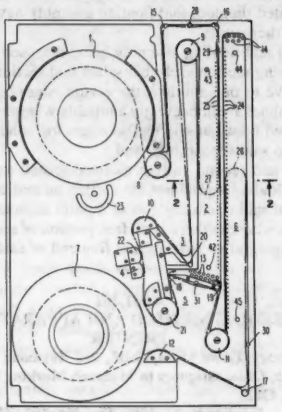
1. A sleeve for use in the treatment of textile threads and yarns including dyeing having a shell wherein the shell comprises peripherally extending axially spaced-apart rings which are elastically yielding in the axial direction of the shell and peripherally spaced-apart webs which are elastically yielding in the axial direction of the shell, said webs extending axially between and connecting together axially adjacent ones of said rings, the axially consecutive webs being laterally off set relative to each other whereby when said rings and webs are yielding, said rings become serpentine and webs become bowed, at least selected ones of said webs being adapted to bow in a selected common direction generally circumferential with respect to said sleeve to ensure substantially uniform displacement of the sleeve members, thus to provide a sleeve having minimum restriction for passage of dye and which sleeve is substantially rigid in yielded or non-yielded state.

4,331,306

MAGNETIC TAPE DEVICE

August P. Epina, Boulder; Richard G. Sellke, Arvada, and Harold A. Lunka, Broomfield, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 22, 1980, Ser. No. 123,729
Int. Cl.[3] G11B *15/58*
U.S. Cl. 242—182 10 Claims



1. Apparatus for storing data on magnetic tape, comprising supply reel means, take-up reel means disposed substantially vertically with respect to said supply reel means, magnetic read/write head means, a drive capstan for controlling the motion of said tape with respect to said head means, and means for establishing a tape path connecting said supply reel means with said take-up reel means, said head means being disposed therebetween, said path comprising a first vertically disposed vacuum chamber open at its upper end and a second vacuum chamber open at its lower end, said vacuum chambers being located adjacent one another, and first and second isolation pockets defined by walls disposed on opposing sides of said head means, at least one of said isolation pockets comprising at least two vacuum sources located in proximity to intersections of walls defining said pocket, at least one of said intersections of walls forming an angle greater than 90° and another of said intersections of walls forming an angle of at least 90°, whereby said path changes direction by more than 180° in said pocket.

4,331,307

EARLY TAPE END ALARM FOR A MULTISPEED TAPE RECORDER

Kenzi Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,290
Claims priority, application Japan, Apr. 14, 1979, 54-45555
Int. Cl.[3] B65H *59/38;* G03B *1/04;* G11B *15/32*
U.S. Cl. 242—186 9 Claims

6. An early tape end alarm system for a multispeed tape recorder for warning of the tape end a predetermined time before the tape end is reached, comprising:

a hub around which a tape is wound and which revolves at a speed corresponding to an amount of tape wound therearound;

pulse generating means for generating a first pulse with a period changing in accordance with the rotary speed of said hub;

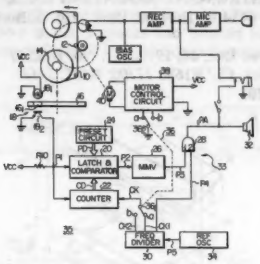
a source of second pulses of a given frequency;

a counter for counting said second pulses during a time duration corresponding to the period of said first pulse;

a comparator coupled to said counter for comparing the

count of said counter with a given value and for producing a third pulse when the count of said counter is above or below the given value;

an alarm circuit coupled to said comparator and responsive to said third pulse for producing an alarm signal to indicate that a traveling tape is approaching its tape end when the third pulse is produced;



means coupled to said alarm circuit for producing an alarm to notify that the traveling tape is approaching its tape end on the basis of the alarm signal; and

means for changing the period of said first pulse as a function of the tape traveling speed for thereby determining the timing of the generation of the alarm signal such that the alarm signal and the alarm are always generated a predetermined time before the tape end is reached, substantially independent of the tape traveling speed.

4,331,308

BACK SPACING APPARATUS FOR A TRANSCRIBING MACHINE

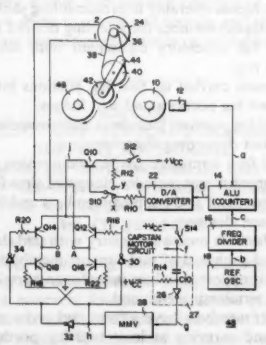
Kenzi Furuta, Hachioji, and Makoto Kondo, Fuchu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,500

Claims priority, application Japan, May 15, 1979, 54-59487

Int. Cl.³ G11B *15/13*; B65H *59/38*; G03B *1/02*

U.S. Cl. 242—191 **11 Claims**



1. A back spacing apparatus for a transcribing machine having a tape supply reel (10) and a take-up reel (46), comprising:

first means (12) coupled to one of said reels (10,46) of said transcribing machine for generating a first signal (a) which is a function of the rotation period of said one reel;

drive means (24, 36–44) coupled to said supply reel (46) and responsive to an electrical signal having a given amount of electrical energy ($Tm \times V$) for rewinding a tape toward said supply reel (46); and

second means (48) coupled to said first means (12) and to said drive means (24, 36–44) and responsive to said first signal (a) for generating said electrical signal having said given amount of electrical energy ($Tm \times V$) for energizing said drive means for a given period of time such that the length of the tape rewound toward said supply reel (46) is substantially constant irrespective of a tape roll diameter of said supply reel (46).

4,331,309

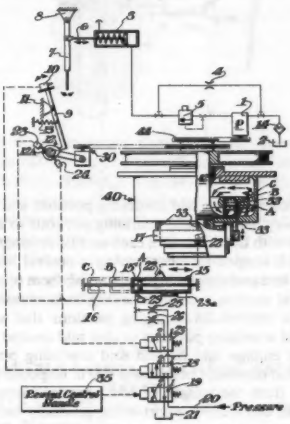
PROGRAMMED AIRCRAFT ARRESTING SYSTEM

Lars H. Myhr, Newark, Del., assignor to All American Engineering Company, Newark, Del.

Continuation of Ser. No. 926,451, Jul. 20, 1978, abandoned. This application Feb. 14, 1980, Ser. No. 121,386

Int. Cl.³ B64F *1/02*; F16F *57/04*

U.S. Cl. 244—110 A **19 Claims**



1. A programmed aircraft arresting control system for a variable K factor energy absorber having a payout over its arrestment and a movable control element which is movable into only a small limited number of pre-established positions each causing the energy absorber to operate at a different pre-established K factor, comprising a drive means connected to the control element for moving the control element into only the small limited number of positions a fixed programming means establishing a predetermined program having a predetermined speed parameter vs. payout for an aircraft being arrested by the aircraft arresting system, speed sensing means for determining the instantaneous speed of the arrested aircraft, comparison means for comparing the instantaneous speed with the corresponding portion of the speed vs. payout parameter of the program whereby aircraft speeds in excess of the parameter are detected, actuating means connected between the comparison means and the drive means, and the actuating means being constructed and arranged and operatively associated with the programming means to cause the control element to move to a predetermined higher K position if the speed parameter is exceeded in a corresponding phase of arrestment.

4,331,310

REFUSE CONTAINER SUPPORTING APPARATUS

Wilbur W. Silva, 704 Creek View Ct., Modesto, Calif. 95351, and Victor K. Zlab, 4833 Berkeley Ave., Hughson, Calif. 95326

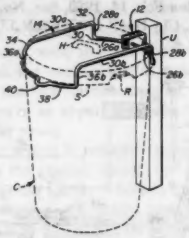
Filed Jul. 24, 1980, Ser. No. 171,975

Int. Cl.³ A47G *23/02*

U.S. Cl. 248—146 **8 Claims**

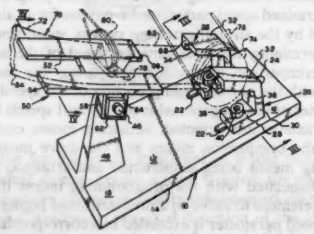
1. Apparatus for supporting a refuse container adjacent an

upright wherein the container is of the type including a wall having a rim that defines an opening affording access to the interior of the container and a removable lid for covering the opening, the lid having a centrally disposed handle, said apparatus comprising a bracket adapted for installation on the upright at a level approximating that of the rim and a rigid unitary container support mounted to said bracket for pivotal movement about a horizontal axis, said support having confining portions shaped and sized to at least partially circumscribe the container wall below the rim, said confining portion being in approximate conformity with said wall for laterally confining said container at opposite regions of said wall, at least two lid retainers rigid with said confining portions, said lid retainers



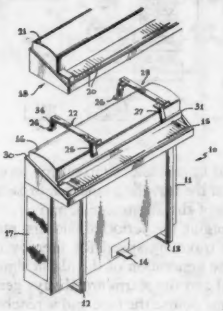
being disposed between said confining portions and flanking a region midway between said confining portions so as to avoid interference with the lid handle, each said lid retainer including an inverted U-shaped member having a central lid engaging portion and first and second legs depending from opposite ends of the central portion, said legs having ends remote from respective said central lid engaging portions that are rigidly joined to said confining portions so that said central lid engaging portions engage said lid and said confining portions circumscribe said container below said rim in response to gravitational force from the weight of said container support about said axis, said container support being pivotally movable to a substantially upright position to permit removal of said lid.

4,331,311
COMPOUND BOW HOLDER
Claude J. Russell, 409 Fayette St., Jonesville, Mich. 49250
Filed Jun. 8, 1981, Ser. No. 271,534
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—176 **9 Claims**



1. A holder for a compound bow comprising, in combination, a base having an upper surface, a lower surface, a rear region and a front region, said base adapted to be supported upon its lower surface in a substantially horizontal orientation, a bifurcated bow end receiving support defined upon said base rear region vertically extending above said upper surface, said support including a pair of spaced projections each having an undersurface disposed toward said base upper surface and separated by a bow eccentric cam receiving notch, a bow limb rest defined upon said base front region vertically extending above said base upper surface obliquely disposed to said base upper surface and spaced from and at a vertical orientation higher than that of said projections undersurfaces, and base mounting means defined upon said base for receiving a surface engaging device.

4,331,312
INSTRUMENT MOUNTING RACK
Paul A. LaVoe, 4114 W. Burbank Blvd., Apt. B, Burbank, Calif. 91505
Filed Dec. 26, 1979, Ser. No. 106,549
Int. Cl.³ F16M *11/00*; G10C *3/12*
U.S. Cl. 248—201 **3 Claims**

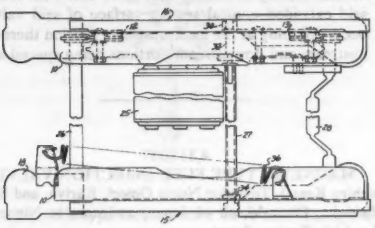


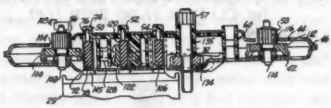
1. A mounting rack apparatus for accessory equipment in combination with a piano having a rounded top separating a front and a rear integral ledge, the conbination comprising:
a pair of mounting racks supported on said front and rear ledges in fixed spaced apart relationship above said rounded top;
each of said racks includes an elongated support member having its opposite ends extending beyond the width of said rounded top and leg portions downwardly depending from the opposite ends to engage with said front and said rear ledges respectfully;
adjustment means operably interconnecting said leg portions to said support member for selecting desired tilt and overhang of the accessory equipment with respect to said rounded top;
cushion means carried on said leg portions interfacing between said leg portions and said ledges;
each of said leg portions includes a main base element and an angled foot depending therefrom;
said angled foot terminating with said cushion means;
said adjustment means includes elongated slots formed in the opposite ends of said support members and holes formed in said base elements;
releasable fastener means in registry with said slots and holes associated each end of said support members;
each of said support members includes an upright flange at a selected terminating end; and
said support members have a front end and a rear end;
said rear end carrying at least two leg portions so as to provide height adjustment by relative positioning of said two leg portions via said releasable fasteners.

4,331,313
6-WAY SPLIT BENCH SEAT ADJUSTER
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Southfield, Mich.
Filed Dec. 26, 1979, Ser. No. 106,710
Int. Cl.³ A45D *19/04*; A47J *47/16*; F16M *16/00*
U.S. Cl. 248—394 **11 Claims**

1. A master seat adjuster power mechanism for attachment

to one side of a seat slide having front and rear lift levers pivoted thereto provided with toothed sectors, a stationary rack adjacent the slide to provide front to rear adjustment thereof, said mechanism comprising an elongated housing formed of dished inner and outer housing plates, a multiple armature electric motor assembly secured to said housing at the inner side thereof and having laterally extending shaft supports and parallel armature drive shafts extending through said shaft supports and into the interior of said housing, the outer housing plate having openings in alignment with the armature drive shafts, a spacer and bearing unit within said housing formed of a rigid low friction polymeric material, said





unit comprising a plate portion having at its inner side locating projections engaging the shaft supports on said motor assembly and having at its outer side lugs extending with clearance through the openings in the outer housing plate, said lugs having inwardly facing bearing recesses to receive the outer ends of said drive shafts, whereby said motor assembly and unit are precisely located with respect to each other, pinions carried by said housing accessible at its exterior and adapted to mesh with said toothed sectors and rack, transmission gearing located entirely within said housing connecting each of said armature drive shafts to one of said pinions, and shafts supporting said gearing supported essentially on said spacer and bearing unit.

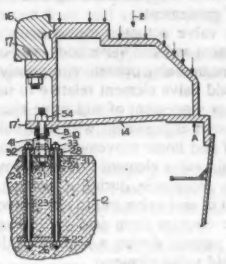
4,331,314

HYDRAULIC PUMP/TURBINE DISCHARGE RING SUPPORT ANCHORAGE

Selim A. Chacour, and Calvin W. Rudacille, both of York, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 22, 1980, Ser. No. 152,169
Int. Cl.³ F16M *7/00*
U.S. Cl. 248—679 **2 Claims**

1. A leveling, supporting and anchoring apparatus for a discharge ring (14) of a hydraulic pump/turbine and the like, comprising: a concrete foundation structure (12); a pair of vertically spaced and aligned foundation rings (22, 28) with an upper of said rings (28) supported on top of said concrete foundation structure (12) and a lower of said rings (22) embedded in said concrete foundation structure (12); a threaded anchor stud (21) secured to the upper of said foundation rings (28) and projecting upwardly through a flange portion (17') of said pump/turbine discharge ring (14); a jack-bolt (43) supported by the upper foundation ring (28) beneath the flange in a vertically adjustable position and moveable upwardly into engagement with the flange portion of the discharge ring to effect a leveling of the discharge ring (14); a threaded nut (54) engaging the end of the threaded stud (21) projecting upwardly through the flange (17') of the discharge ring (14) to capture the discharge ring between the top of the jack-bolt (43) and the anchor stud nut (54) and prestress said anchor stud (21); a plurality of vertical tubular sleeves (24) embedded in said concrete foundation structure between the foundation rings (22, 28); and a plurality of anchor bolts (23) each extending through the upper foundation ring (28), through one of said sleeves (24) between the upper and lower foundation rings (22, 28) and through the lower foundation ring (22), and means prestressing said anchor bolts, and with the sleeves (24) having



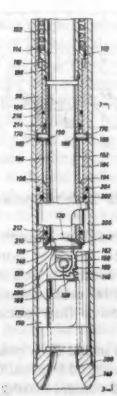
an internal diameter larger than the outer diameter of the anchor bolts (23) to thereby provide for limited movement of the pump/turbine discharge ring (14) and the anchor bolts (23) relative to the sleeves (24) and the concrete foundation structure (12) without relieving the prestress applied to the discharge ring leveling anchor stud (21) and foundation ring anchor bolts (23) and further provide for level adjustment of the discharge ring (14) without relieving the prestress applied to the anchor bolts (23).

4,331,315

ACTUATABLE SAFETY VALVE FOR WELLS AND FLOWLINES

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Nov. 24, 1978, Ser. No. 963,459
Int. Cl.³ F16K *31/163;* E21B *33/10*
U.S. Cl. 251—14 **30 Claims**



1. A safety valve mechanism for controlling fluid through a conduit, said safety valve mechanism comprising:

a valve body having a flow passage defined thereby, said valve body defining a valve chamber and defining a protective receptacle outside of said flow passage;

valve seat means being located within said valve chamber about said flow passage;

a valve element being movably positioned within said valve

chamber, said valve element having first and second linear components of movement and a linear and pivotal component of movement and being linearly movable into and away from seated engagement with said valve seat during said first linear component of movement and being pivotally movable from a position within said flow passage to a protected position outwardly of said flow passage during said linear and pivotal component of movement and further being linearly movable to a protected position within said protective receptable during said second linear component of movement;

cooperative valve actuator means being defined by said valve element and said valve body, said cooperative valve actuator means being operative responsive to linear movement of said valve element relative to said valve body to allow linear movement of said valve element into and out of said seated engagement with said valve seat during a portion of said linear movement and cause pivotal movement of said valve element from said flow passage to said protective receptacle during a portion of the opening movement of said valve and to cause pivotal movement of said valve element from said protective receptable into said flow passage during a portion of the closing movement of said valve element;

first actuator power means normally urging said valve element toward the closed position thereof; and

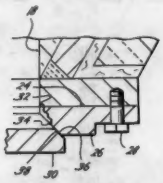
second actuator power means being operative to overcome said first actuator power means and impart linear and pivotal opening movement of said valve element and to maintain said valve element within said protective receptacle.

4,331,316

SHUT-OFF VALVE FOR HIGH TEMPERATURE EROSIVE FLOW

Frank J. Jandrasi, Houston, Tex., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 21, 1980, Ser. No. 209,090
Int. Cl.³ F16A *25/00*
U.S. Cl. 251—86 **6 Claims**



1. A shut-off valve for high temperature erosive flow, comprising,

a body provided with a flow passage through it including an inlet extending into an entry portion extending into an enlarged internal chamber which includes an outlet downstream thereof, initial erosion point of the flow passage caused by the erosive flow occurring upstream of the entry,

a valve seat disposed in the flow passage adjacent the entry portion into the enlarged internal chamber, the valve seat having an extended conical seating surface downstream of the initial erosion point and out of direct flow through the flow passage,

a valve member having a coacting conical valve seating surface arranged to seat on the valve seating surface of the valve seat,

means disposed in the enlarged internal chamber operable to rotate the valve member to seat the valve seating surface thereof against the valve seating surface of the valve seat to close the valve and to rotate the valve member out of the direct flow through the flow passage to open the valve,

said means including a rotatably mounted shaft disposed in the enlarged internal chamber out of the direct flow path,

means connecting the valve to the shaft effective so that rotation of the shaft rotates the valve member and opens and closes the valve,

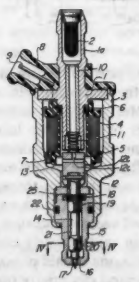
whereby, erosion of the flow passage and valve seat upstream of the conical seating surface of the valve seat does not prevent an effective closure of the valve, said conical valve seating surface of said valve member seating exclusively on the most downstream portion of the extended conical seating surface of said valve seat with erosion of said extended conical seating surface of said valve seat occurring only at the most upstream portion thereof, said upstream and downstream portions being spaced apart.

4,331,317

MAGNETIC TYPE FUEL INJECTION VALVE

Kenichiro Kamai, Toyoake; Norio Omori, Kariya, and Shinichi Nishioka, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 29, 1980, Ser. No. 154,460
Claims priority, application Japan, Jun. 5, 1979, 54-70183
Int. Cl.³ F16K *31/06*; B05B *1/30*
U.S. Cl. 251—139 **2 Claims**



1. A magnetic type fuel injection valve comprising:

a magnetic coil;

a stationary core adapted to be magnetized upon energization of said magnetic coil;

a movable core having one end opposed to one end of said stationary core and being formed with an axial bore open to the other end of said movable core remote from said stationary core, said movable core being movable toward said one end of said stationary core upon magnetization of said stationary core, said axial bore having an end face opposite an opening to the other end;

a needle valve having one end fitted in said axial bore and movable with said movable core to open and close a fuel injection port, said needle valve one end having a face directly abutting said axial bore end face;

a first hole formed through the wall of said movable core surrounding said axial bore and extending substantially perpendicularly to said axial bore;

a second hole formed in said one end of said needle valve to substantially align with said first hole; and

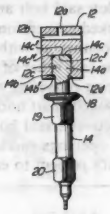
an elongated number having, in its free condition, an outer diameter slightly larger than said first and said second holes whereby said member is tightly fitted in said first and second holes to securely connect said needle valve to said movable core.

4,331,318

MAGNETIC TYPE FUEL INJECTION VALVE

Kenichiro Kamai, Toyoake; Norio Omori, Kariya, and Shinichi Nishioka, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 4, 1980, Ser. No. 156,464
Claims priority, application Japan, Jun. 5, 1979, 54-70182
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—139 **2 Claims**



1. In a magnetic type fuel injection valve comprising a magnetic coil, a stationary core adapted to be magnetized upon energization of said magnetic coil, a movable core having one end opposed to one end of said stationary core and being movable toward said one end of said stationary core upon magnetization of said stationary core, a needle valve, and means for securely connecting said needle valve to said movable core to enable said needle valve to move with said movable core to thereby open and close a fuel injection port, the improvement wherein said connecting means comprises:

a bottomed axial bore formed in said movable core and open to the other end of said movable core remote from said stationary core so as to define a bottom surface therein;

an end portion of said needle valve defined between one end face of said needle valve and a stepped portion formed on said needle valve;

said one end face having a frusto-conical configuration and a flat central surface;

said stepped portion including a surface which faces substantially in an opposite direction from said one end face of said needle valve;

said end portion of said needle valve being tightly fitted into said bottomed axial bore so that said flat central surface abuts said bottom surface and securely fixed therein by a wall of said movable core which surrounds and is at least partially caulked onto said surface of said stepped portion.

4,331,319

BUTTERFLY VALVE

Anthony C. Summers, Morningdale, and Jerry D. MacAfee, Northboro, both of Mass., assignors to Jamesbury Corp., Worcester, Mass.

Filed Mar. 6, 1980, Ser. No. 127,747
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—173 **2 Claims**

1. A butterfly valve comprising:

a valve housing having a seat receiving recess formed therein;

an annular, generally U-shaped, flexible seat means positioned in said housing recess and circumscribing a fluid flow channel through said housing;

a valve insert member on an insert side of said seat means positioned to cooperate with said housing to clamp said seat means in position;

a valve disc mounted in said housing on a shaft side of said seat means for rotation on a valve shaft about an axis substantially perpendicular to the flow axis of said channel, said valve disc having a circumferential sealing surface on the periphery thereof to cooperate with said seat means to block the flow of fluid through said channel when said disc is closed;

said valve housing, said valve insert member and said valve disc together comprising a radially outer flange zone, a radially intermediate support zone and a radially inner sealing zone;

said valve housing including a valve seat receiving groove having a bottom surface and a side surface;

said valve insert member comprising:

(a) a surface spaced from said valve housing in said flange zone to form a clamping space;

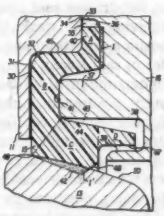
(b) an axial protrusion in said support zone, said axial protrusion extending towards said bottom surface of said valve housing, and

(c) an axial recess in said sealing zone, said axial recess being axially deeper than said clamping space;

said seat means comprising:

(a) a flange portion in said clamping space, said flange portion being axially larger than said clamping space whereby said flange portion is rigidly held and compressed between said valve housing and said valve insert,

(b) a support segment in said support zone, said support segment comprising one leg and a portion of the base of said U-shape, said support segment extending between said bottom surface of said valve housing and said axial protrusion and being of an axial thickness less than the distance between said axial protrusion and said bottom surface of said valve housing, whereby limited axial motion of said support segment is permitted, the radially



outer surface of said support segment being in contact with said side surface of said valve housing so as to provide radial support for said valve seat,

(c) a sealing segment in said sealing zone, said sealing segment comprising a portion of the radially inner leg of said U-shape, said sealing segment having a radially outer surface and a radially inner surface smaller than said radially outer surface, said sealing segment including a sealing surface engageable with said sealing surface of said valve disc, said sealing surface of said sealing segment having an inclination similar to that of said valve disc and extending radially inward from said sealing surface of said valve disc, and

(d) an extension segment in said sealing zone, said extension segment comprising an axial extension of said radially inner leg of said U-shape and extending into said axial recess of said valve insert, the radially inner surface of said extension segment being spaced from, but positioned to contact, the radially inner surface of said axial recess to form a stop means preventing excessive radial deflection of said seat;

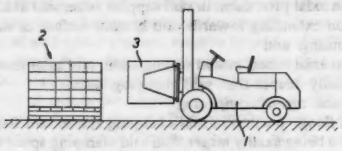
said radially inner and outer surfaces of said sealing segment comprising first unbalanced differential areas deflecting said seat means radially inwardly and toward said shaft side when fluid pressure is from said insert side; and

said radially outer surface of said support segment and a radially inner smaller exposed surface of said sealing zone comprising second unbalanced differential areas deflecting said seat means radially inwardly and toward said insert side when fluid pressure is from said shaft side.

4,331,320
CLAMP LIFT TRUCK

Seiji Naruse, Sodegnara, and Fumiaki Maeda, Chiba, both of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 136,055
Claims priority, application Japan, Apr. 14, 1979, 54-49622[U]
Int. Cl.³ B60P 1/00
U.S. Cl. 254—2 R 1 Claim



1. A clamp lift truck for lifting a rectangular hexahedral stack of boxes comprising:

a vertically movable four-side clamp lift comprising:

a plurality of uniformly demensioned generally flat clamp plates having widths substantially covering the surroundings of said rectangular hexahedral stacks of boxes, said uniformly dimensioned flat clamp plates being supported to be adapted for closely abutting against two pairs of opposing sides of said stack so as to clamp said stack with entirely uniform clamping force;

a dirve mechanism for driving said clamp lift into an open position for receiving said stack therebetween and a closed clamp position for simultaneously clamping said two pairs of sides of said stack;

fluid-operated cylinders mounted on said clamp lift; and

a pair of opposingly positioned L-shaped brackets; said plurality of uniformly dimensioned flat clamp plates comprising two pairs of uniformly dimensioned flat clamp plates supported on said pair of opposingly positioned L-shaped brackets which are driveable in a diagonal direction thereof into clamp positions by said fluid-operated cylinders, one of said brackets being rotatable for moving one pair of said uniformly dimensioned flat clamp plates between open and closed clamp positions.

4,331,321
LIFTING DEVICE

Anton Lingper, Im Malarsch 4, 9494 Schaan, Liechtenstein

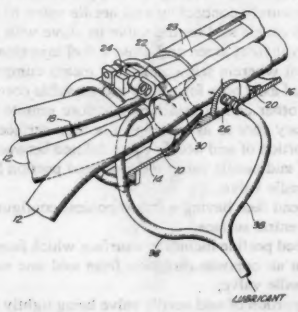
Filed May 14, 1980, Ser. No. 149,682
Claims priority, application Austria, May 22, 1979, 3770/79
Int. Cl.³ B66F 3/00
U.S. Cl. 254—134 6 Claims

1. A lifting device for transporting loads including a generally vertically extending support structure, at least one approximately horizontally extending support arm cantilevered from said support structure, and attachment means for connecting said support arm with said support structure, said attachment means comprising: a contact plate affixed to said support arm at an end thereof proximate said support structure and extending relative to said support arm perpendicularly to the longitudinal extension thereof; a hooked suspension portion affixed to one of said support structure and said contact plate; a slot formed in the other of said support structure and said contact plate, said slot being configured to receive said hooked suspension portion therein; a bolt affixed to one of said support structure and said contact plate; and an aperture defined in the other of said support structure and said contact plate and located to receive said bolt therein when said hooked suspension portion is engaged within said slot; said bolt and said aperture being located beneath said hooked suspension portion and said slot when said support arm is connected with said support structure by said attachment means; said other of said support structure and said contact plate being provided with a plurality of said apertures and said slots spaced apart horizontally each adapted to receive therein, respectively, said bolt and said suspension portion, said plurality of openings and slots being arranged in a formation staggered with respect to each other.

4,331,322
CABLE LAYING APPARATUS

Harold F. Woodruff, 2340 Avocado Ter., Hacienda Heights, Calif. 91745

Filed Feb. 25, 1980, Ser. No. 124,132
Int. Cl.³ F16N 15/00
U.S. Cl. 254—134.3 FT 14 Claims



1. A guide for simultaneously laying a plurality of cables in a conduit comprising;

(a) a body sized to fit within a conduit into which cables are laid, the conduit comprising an underground duct and a feed bell, the body being tapered to fit within the bell, the body having a plurality of longitudinal channels along its periphery for forming a plurality of spaced-apart cable guide passages in cooperation with the internal wall of the conduit, the channels being sufficiently large that a cable can be pulled through each guide passage; and

(b) means for introducing a lubricant into each channel.

4,331,323
ELECTRIC WINCH SYSTEM

Toshiyuki Sekimori, and Hiromichi Shigenobu, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1980, Ser. No. 154,500
Claims priority, application Japan, Mar. 11, 1980, 55-30630[U]
Int. Cl.³ B66D 1/00; B61F 19/04
U.S. Cl. 254—323 6 Claims

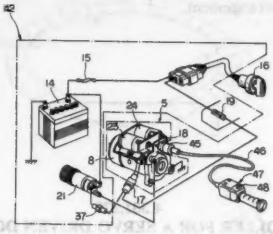
1. An electric winch system comprising:

an electric winch provided on the outside of a vehicle body;

a DC power source within an engine compartment of said vehicle;

a direction control switch assembly including a control switch;

a pair of connector parts, said connector parts when communicating together providing a first circuit for actuating a means controlling a power switch connector to said winch whereby said winch is energized only when said connector parts communicate, and a second circuit responsive to



said direction control switch for controlling the direction of said winch;

a power switch, said power switch applying an operating voltage to said winch; and

means for controlling said power switch in response to a signal from said first circuit whereby said power switch is enabled when said connector parts are communicating.

4,331,324

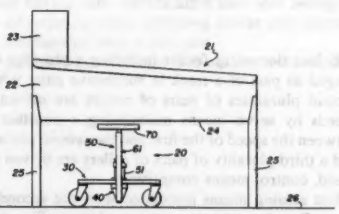
LIFT DEVICE FOR PINBALL GAME

Eddie J. Andary, Avacado Heights, Calif., assignor to Wico Corporation, Niles, Ill.

Filed Apr. 29, 1980, Ser. No. 144,969

Int. Cl.³ B66F 5/04

U.S. Cl. 254—2 R **4 Claims**



1. A lightweight portable lift device for lifting and moving a pinball game supported above the floor on upstanding support legs, said lift device comprising a generally H-shaped mobile carriage adapted to be moved beneath the associated pinball game between the support legs thereof, said carriage including two spaced-apart substantially parallel horizontal side beams and crossbeam structure interconnecting said side beams intermediate the ends thereof and substantially normal thereto, vertically extensible elevator structure carried by said crossbeam structure and engageable with the bottom of the associated pinball game, said elevator structure being movable between a fully lowered position and a fully raised position, drive means carried by said crossbeam structure for effecting movement of said elevator structure between the fully lowered and fully raised positions thereof thereby to effect raising and lowering of the associated pinball game, a dolly platform mountable directly on said carriage for use thereof as a dolly, and means removably mounting said elevator structure on said carriage to facilitate mounting of said dolly platform thereon.

4,331,325

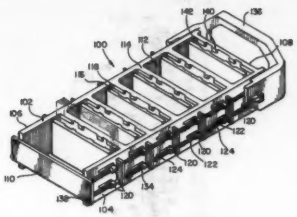
BASKET DESIGN

Todd A. Urban, Fleetwood, and Terry R. Oxenreider, Wernersville, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Apr. 11, 1980, Ser. No. 139,413

Int. Cl.³ H01M 2/00

U.S. Cl. 269—43 **5 Claims**



1. An apparatus for clamping a plurality of plate stacks used to form the series connected cells of a lead acid storage battery, each of said stacks comprising a plurality of alternating more or less rectangular positive and negative plates with an insulating separator placed therebetween, each of said plates having an upstanding lug, said plates being disposed within said stacks so that all of the positive lugs lie along one side of the stack and all of the negative lugs lie along an opposite side, said apparatus comprising:

(a) a frame, said frame being more or less rectangular and further comprising an end wall, two sidewalls attached to said end walls such that they are perpendicular to said end wall and parallel to each other, and a plurality of regularly spaced divider plates disposed between said sidewalls and parallel to said end wall so as to define a plurality of rectangular cavities within said frame;

(b) a plurality of reciprocally movable clamping plates disposed so that there is at least one within each of said cavities;

(c) independent movement means positioned outside said sidewall attached to said clamping plates and adapted to move each of said clamping plates from a closed position within its cavity to an open position thus creating a space within said cavity into which one of said plate stacks can be inserted; and

(d) independent bias means attached to said movement means and adapted to return said open positioned clamping plates to final rest position between the open and closed positions wherein said stack is clamped within said cavity so that it cannot move, said bias means being adapted to move each plate individually so that the rest position of one of said movable plates is independent of the rest positions of the remaining clamping plates and each of said stacks is clamped with a uniform pressure.

4,331,326

STUD MOUNTED TOGGLE CLAMP WITH A SECONDARY RELEASE MECHANISM

Richard W. Strouss, R.D. #3, Hanover, Pa. 17331

Filed Jul. 28, 1980, Ser. No. 172,534

Int. Cl.³ B23Q 3/02

U.S. Cl. 269—93 **9 Claims**

1. A clamp for releasably securing a workpiece to a support surface, the combination comprising:

a fixed member;

a stud rigidly coupled to said fixed member and rigidly coupled to the support surface;

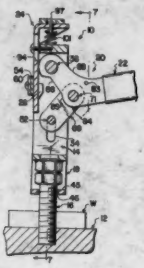
a movable clamping member having a surface for clamping the workpiece to the support surface;

said movable clamping member having an opening in said clamping surface receiving said stud therein;

means for slidably coupling said movable clamping member to said fixed member; and

means for reciprocating said movable clamping member towards the support surface into a workpiece clamping position and away from the support surface into a workpiece releasing position and for locking said movable clamping member in the workpiece clamping position,

said means for reciprocating and locking including a handle,



means for pivotally coupling said handle to said fixed member,

a pair of toggle links,

means for pivotally coupling said toggle links to said handle, and

means for pivotally coupling said toggle links to said movable clamping member and for slidably coupling said toggle links to said fixed member.

4,331,327

APPARATUS FOR DESTACKING AT LEAST TWO STACKS OF FLEXIBLE FLAT STRUCTURES, ESPECIALLY SHEETS OR PRINTED PRODUCTS

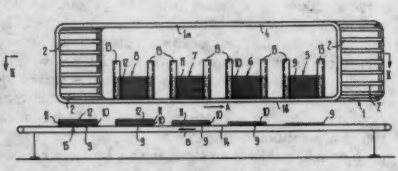
Willy Felix, Strengelbach, Switzerland, assignor to Jos. Hunkeler AG, Fabrik Fuer Graphische Maschinen, Wikon, Switzerland

Filed Mar. 18, 1980, Ser. No. 131,439

Claims priority, application Switzerland, Mar. 30, 1979, 2965/79

Int. Cl.³ B65H *3/44, 39/043*

U.S. Cl. 271—9 **5 Claims**



1. In an apparatus for destacking at least two stacks of flexible flat structures, especially sheets or printed products, wherein a revolvingly driven roll grate arrangement forms the stack support surface for all of the stacks, the roll grate arrangement travelling in a predetermined direction of movement along a base surface of the stacks which are arranged in tandem with respect to one another, the roll grate arrangement containing grate rolls, said grate rolls and the stacks being obliquely positioned relative to one another, a respective driven separator device arranged below the roll grate arrangement constituting the stack support surface and operatively associated with a related one of the stacks, each of the separation devices serving to periodically engage between the grate rolls in order to seize and downwardly draw an edge of the momentarily engaged flat structure of the related stack, and a conveyor device arranged below the stacks for outfeeding the flat structures which have been separated from the stacks, the improvement which comprises:

said roll grate arrangement being arranged to have a returning portion extending above the stacks;

the conveyor device comprising a conveyor element which is common for all of the stacks; and

said conveyor element having a direction of conveying which is opposite to the direction of movement of the roll grate arrangement.

4,331,328

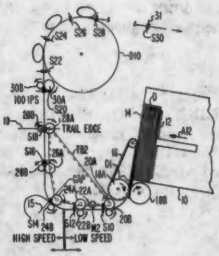
CONTROLLER FOR A SERVO DRIVEN DOCUMENT FEEDER

Harold A. Fasig, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 30, 1980, Ser. No. 164,004

Int. Cl.³ B65H *5/34*

U.S. Cl. 271—270 **8 Claims**



1. In a document feeder including a plurality of rollers arranged as part of a track in successive pairs where first and second pluralities of pairs of rollers are driven at different speeds by servo means maintaining a constant speed ratio between the speed of the first and the second pluralities of pairs and a third plurality of pairs of rollers are driven at a constant speed, control means comprising:

first sensing means associated with the second plurality of rollers for detecting passage of the trailing edge of a first document and providing a first signal indicating that passage;

said first sensing means providing a second signal indicating when the leading edge of a second document passes;

processor means coupled to be responsive to said first and second signals to determine the length of the gap between the respective trailing and leading edges of the first and second documents; and

second sensing means associated with the second plurality of rollers for providing a third signal indicating the passage of the trailing edge of the first document as it leaves the control of the second plurality of rollers;

said processor means responding to said third signal to provide a servo motor control signal altering the speed of the servo means and thereby producing changes in the length of the gap until a gap of required size is obtained; and

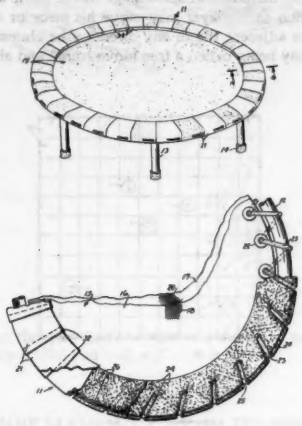
said processor means, after the required gap is obtained, changing the speed of said servo means to a speed imparting the transport speed to the document for entry into control by the constant speed third plurality of rollers.

4,331,329

REBOUND EXERCISER

Konstantin Mirkovich, and Joyce M. Mirkovich, both of 3909 Via Manzana, San Clemente, Calif. 92672

Filed Apr. 6, 1981, Ser. No. 251,304
Int. Cl.³ A63B 5/08
U.S. Cl. 272—65 8 Claims



1. A rebound exerciser comprising
a diaphragm,
a supporting frame surrounding said diaphragm,
said diaphragm having spaced openings adjacent the periphery thereof,
a lacing threaded spirally through said openings and around said frame,
at least one resilient padding member extending over the top of said frame,
said member having slots therein fitted over said lacing,
a plurality of retaining strips extending across said member,
said strips overlapping each other, and
means for maintaining said strips taut against said member.

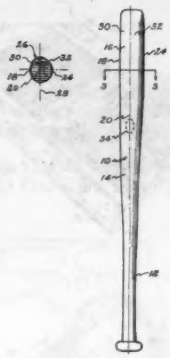
4,331,330

BASEBALL BAT WITH IMPROVED HITTING SURFACE AND LESS MASS

Joseph C. Worst, 3606 Nandina Dr., Louisville, Ky. 40222

Filed May 14, 1979, Ser. No. 38,655
Int. Cl.³ A63B 59/06
U.S. Cl. 273—72 R 2 Claims

1. A baseball bat comprising:
a. a lower handle portion;
b. an intermediate portion; and
c. a ball-hitting portion;
d. said ball-hitting portion having a transverse convex curvilinear cross section schematically divided into two ball-hitting half segments by a vertical cross plane that includes the longitudinal centerline of the bat, whereby one of the two ball-hitting half segments is less rounded and of a smaller sectional area than the other ball-hitting half segment while the two half segments join with each other generally on the vertical cross plane and are generally free of sharp corners, the said front ball-hitting half segment is formed substantially by a semi-ellipse, and the rear half segment is formed substantially by a semi-circle, where the major axis of the semi-ellipse substantially overlies



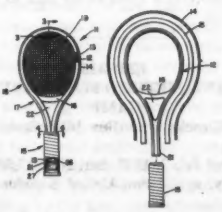
both the diameter of the semi-circle and the said vertical cross plane.

4,331,331

GAME RACQUET AND METHOD OF MAKING

Robert E. Rodgers, Jr., Houston, Tex., assignor to Leach Industries, Inc., San Diego, Calif.

Filed Sep. 20, 1979, Ser. No. 77,274
Int. Cl.³ A63B 49/02
U.S. Cl. 273—73 K 4 Claims



1. A method of making a game racquet comprising the steps of providing a preformed unitary synthetic plastic frame member having integral desired head, throat and handle end portions, said head including a yoke extending adjacent the throat to complete a closed perimeter for the stringing area, then using the outer periphery of said frame as a form bending a longitudinally bendable metal channel member snugly upon and along the outer periphery of said preformed frame to embrace said frame at least along the head and throat portions, and bonding said channel member to the preformed frame.

4,331,332

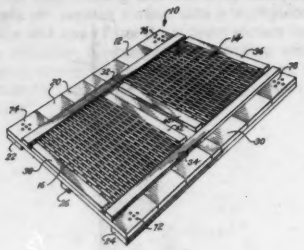
PORTABLE GOLF PRACTICE STATION

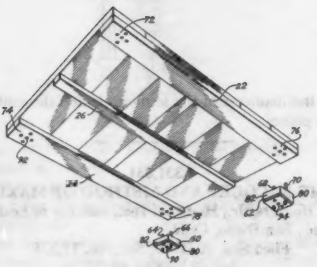
Royal W. Hughes, 3675 Gordon Rd., Elkhart, Ind. 46516

Filed Jan. 8, 1981, Ser. No. 223,321
Int. Cl.³ A63B 69/36
U.S. Cl. 273—195 B 5 Claims

1. A portable golf practice station comprising a substantially flat rectangular platform having an area for supporting a golfer and an area for a golf ball, walls on said platform forming two recessed areas spaced inwardly from the edges of the platform, a resilient, perforated mat means disposed in one of said recesses and forming a surface on which the golfer stands, a second resilient perforated mat means disposed in the other of said recesses and forming a surface in the area for a golf ball, two

removable, platform support members, and means for securing said members to any two adjacent corners of said rectangular





platform for tilting said platform from end-to-end from either end and from side-to-side from either side to simulate actual fairway conditions.

4,331,333

APPARATUS AND METHOD FOR PLAYING A BOARD GAME

Martin E. G. Willcocks, P.O. Box 1688, Santa Monica, Calif. 90406

Filed Jul. 7, 1977, Ser. No. 813,504

Claims priority, application United Kingdom, Jul. 9, 1976, 28690/76

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—238 **23 Claims**

1. Apparatus for playing a game comprising

a tray of specified shape for containing tiles,

a plurality of tiles of specified shapes and of one or more kinds, so constructed that they fit into said tray to fill it completely with a single layer of said tiles,

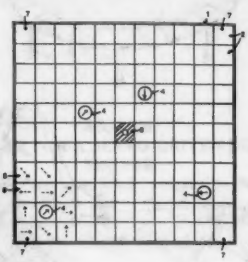
each of said tiles having assigned to it an unique direction of movement which cannot be readily determined without external means therefor,

each of said tiles being capable of being placed in more than one position within the said tray and of assuming more than one possible orientation at any such position,

said tiles fitted into said tray comprising the board for said game, certain of said tiles being designated as starting positions for each of the players and a certain one or certain ones of said tiles being designated as the finishing position for all players or as finishing positions for each of the players,

and a plurality of pieces for play, each of said pieces being identifiable by a mark or color, and each containing means for determining and indicating the unique direction of movement assigned to any tile upon which it is placed, several pieces of each of a number of colors being provided.

23. A method for playing a game using apparatus according to claim 1, wherein each of several players is assigned pieces of a particular color, and at the start of the game said tiles are arranged in said tray in a random manner so that the exact configuration of the directions of movement assigned to all of the tiles is not known to any of the players and can only be determined in play by placing pieces upon the tiles, and wherein each player in turn places at least one of his pieces upon the board at a specified starting location assigned to him and thereafter moves one piece at a time according to the rules of said game, including at some stage of the game a round of play in which each player may move his piece or one of his pieces to an adjacent tile in any direction he chooses, such a round of play being called a free move round and also including at some stage of the game a round of play in which each player must move his piece or one of his pieces according to the unique direction of movement assigned to the tile upon which it rests, such a round of play being called a forced move round, such free and forced move rounds of play alternating in some specified manner, and wherein each player attempts to move his pieces to a specified finishing location which may be the same for all players or may be different for each player, and subsidiary objectives of the game include the capture of opponents' pieces or constraining the opponent to move his pieces in less advantageous directions.



4,331,334

GOLF BOARD GAME

Elmer R. Clemmer, 10520 Edison Way, North Hollywood, Calif. 91606

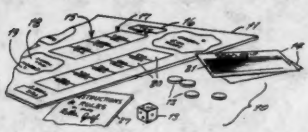
Filed Sep. 30, 1980, Ser. No. 192,242

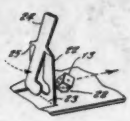
Int. Cl.³ A63F *3/00, 7/06*

U.S. Cl. 273—245 **1 Claim**

1. A golf game, comprising, in combination, a gameboard, a plurality of playing pieces for movement upon said gameboard, a die for determining the travel distance of said playing pieces on said gameboard, means on said gameboard for hitting said die, score cards for keeping players' scores, and an instructions booklet for playing said game; a three hole golf course being printed on said gameboard; and said die-hitting means comprising a fold-out on an upper side of said gameboard, said fold-out being upwardly foldable about a fold line at a base thereof, a cut-out of a golf club on said fold-out, said golf club being pivotable about a horizontal fold line on said fold-out; a depres-

sion on said gameboard into which a corner of said die is fitted, said depression being located a distance respective to said





fold-out, so that said golf club hits said die when said fold-out is upwardly folded and said golf club is pivoted.

4,331,335

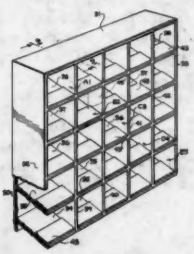
HARDWARE ELEMENTS STORAGE DISPENSER AND GAME DEVICE

Donald E. Starkweather, 7435 Madison, Kansas City, Mo. 64114

Filed Dec. 17, 1979, Ser. No. 104,189

Int. Cl.³ A47F *1/08*; B65D *85/24*; F41J *1/00*

U.S. Cl. 273—345 **33 Claims**



4. A game device comprising in combination:

a backing board adapted to be supported in normally vertical position,

said board having front and back faces,

a plurality of open faced compartment members secured to the front face of said board, each compartment member made up of at least one wall member providing a substantially flat floor and side walls rising upwardly from the lateral limits of each such floor, thereby providing a plurality of separate, floored receptacles extending from the said one face of said backing board,

the floor of each such compartment uniformly inclined downwardly at a substantial yet limited angle normal to the backing board and extending outwardly away therefrom with the outer upper surface of at least some of said floors magnetized to retain magnetic objects on said floor,

said some floors each also being provided with a portion thereof which is not magnetized,

the portions of the partially magnetized compartment floors which are not magnetized also having a low surface frictional resistance, whereby objects placed thereon will tend to continuously move from inboard adjacent the backing board outwardly on each said floor to the magnetized zones where they will be held from further movement by magnetic force.

4,331,336

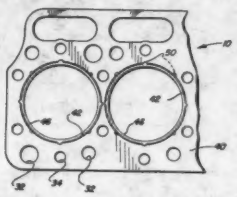
HEAD GASKETS AND METHOD OF MAKING SAME

Daniel E. Czernik, Hinsdale, and John C. Moerk, Jr., Buffalo Grove, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Sep. 11, 1980, Ser. No. 186,126

Int. Cl.³ F16J *15/12*; B23P *11/00*

U.S. Cl. 277—1 **20 Claims**



1. A method of manufacturing a cylinder head gasket assembly for use in sealing the head and block of an internal combustion engine comprising the steps of:

providing a completed self-supporting unused gasket assembly having an expansive main gasket body comprising a compressible heat-resistant facing sheet and defining at least one combustion opening therein, and a fire ring at said combustion opening;

then, prior to installation of said gasket assembly in an engine, in a press means applying a precompression load to said unused gasket assembly to compress said fire ring to alter the characteristics of said fire ring; and

relieving said gasket assembly of said precompression load; and then removing said unused precompressed gasket assembly from said press means, whereby upon recompression of said gasket assembly in an engine at the available design head load, a portion of the head load will be taken up by each of the gasket body and fire ring to assure proper sealing by the head gasket assembly.

4,331,337

AIR FILM-EXPANDED GAS SEALS

Michael E. Cross, 52 Bloomfield Ave., Bath, Avon, and Rodney A. Cross, Raby Villa, Sidney Wharf, Bath, Avon, both of England

Filed Nov. 24, 1980, Ser. No. 209,828

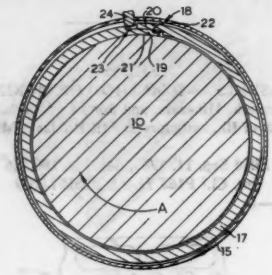
Claims priority, application United Kingdom, Nov. 23, 1979, 7940578

Int. Cl.³ F16J *15/42, 15/48*

U.S. Cl. 277—1 **13 Claims**

1. A sealing member for effecting a seal between a housing and a shaft mounted for rotation normally in one sense only, said housing surrounding with clearance the shaft and said sealing member being in the form of a ring adapted loosely to be fitted within said housing so as closely to surround said shaft, said ring having a split which allows circumferential expansion thereof and having a radially inner face which is so formed as to define at least one ramp surface with respect to the shaft around which the ring is fitted, whereby the clearance between said inner face of the ring and said shaft decreases from a maximum value at a first point on the ring to a second point spaced angularly from said first point in the direction of normal rotation of the shaft, the ring touching the shaft at said

second point so that on rotation of the shaft at a sufficiently high speed, gas is carried round by the shaft within said clearance so as circumferentially to expand said ring and lift said second point of said ring clear of the shaft.

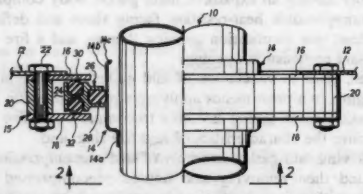


4,331,338

DUCT SEAL ASSEMBLY

Jack H. Caldwell, Kent, and Peter Llewellyn, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1980, Ser. No. 219,425
Int. Cl.³ F16J 15/12, 15/32
U.S. Cl. 277—58 **15 Claims**



1. A seal assembly for forming a fluid-tight seal between a duct and a wall where the duct passes through an opening in the wall sufficiently large to permit the duct to move laterally within the opening, comprising:

an annular housing affixed to said wall about said opening in said wall so as to form a passage through which said duct passes, said passage being sufficiently large to allow said duct to undergo lateral movement within said passage relative to said wall, said housing including means forming a circumferential internal recess that opens radially inwardly toward said duct and which includes mutually opposing, substantially parallel interior sidewalls extending generally parallel to the plane of said wall; and

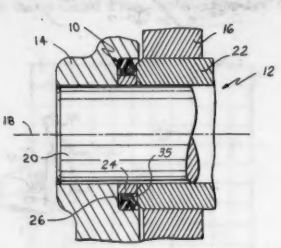
a substantially circular carrier ring engaged in said recess of said housing, said carrier ring having a first circumferential O-ring groove opening radially inwardly and supporting a first elastomeric O-ring snugly received in said first groove, said carrier ring and said first O-ring being sized such that said first O-ring snugly encloses in sealing relationship an exterior surface of a duct passing through said opening in said wall, said carrier ring further including at least one circumferential O-ring groove opening radially with respect to the axis of said carrier ring and supporting an elastomeric O-ring sized to snugly abut an interior facing sidewall of said recess to provide a seal between said carrier ring and said housing, said recess of said housing being sized larger in diameter than the diameter of said carrier ring so as to provide radial clearance for relative lateral motion of said duct and said carrier ring with respect to said housing.

4,331,339

SEAL ASSEMBLY HAVING A PLASTIC ANNULAR SEALING MEMBER WITH AN INTEGRAL SEALING LIP

Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01568, § 371 Date Nov. 21, 1980, § 102(e) Date Nov. 21, 1980
PCT Filed Nov. 21, 1980, Ser. No. 273,878
Int. Cl.³ F16J 15/32, 15/38
U.S. Cl. 277—84 **17 Claims**



1. In a seal assembly (**10**) positioned between first and second relatively movable members (**14, 22**) for sealing therebetween and cooperating therewith in defining a lubricant holding chamber (**35**), the seal assembly (**10**) including an annular sealing member (**36**) having an integral sealing lip (**38**) for retaining lubricant in the chamber (**35**) and for preventing the ingress of contaminants therein, and load means (**42**) borne by the first member (**14**) for urging the sealing lip (**38**) into sealing engagement with the second member (**22**), the improvement comprising:

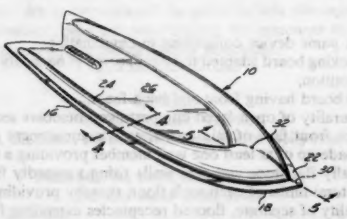
an annular polymeric plastic sealing member (**36**) having a dry coefficient of dynamic friction on lapped hardened steel in the range of approximately 0.05 to approximately 0.35 and a load/velocity relationship (PV) in the range of approximately 70.0 (2,000) to approximately 1576.0 (45,000).

4,331,340

WATER AND SNOW PLANING BOARD

Robert D. Bolen, 1818 Pine St., Huntington Beach, Calif. 92648

Filed Jun. 4, 1980, Ser. No. 156,355
Int. Cl.³ A63C 15/00
U.S. Cl. 280—12 R **4 Claims**



1. A planing board comprising the coacting combination of:

a bottom comprised of a sheet of polymeric resin, optionally including glass fiber reenforcing, the sheet longitudinally comprising an elongate generally flat portion and an upwardly curving front portion, the entire sheet being continuous and substantially flat in the lateral direction along substantially the entire length thereof;

a top comprised of a sheet of polymeric resin, optionally including glass fiber reenforcing, the sheet comprising three portions, the first portion comprising a laterally

substantially flat peripheral lip portion having substantially the same outline configuration as the outline configuration of the bottom, and being curved longitudinally corresponding to the longitudinal curvature of the bottom such that the lip lays snugly against the periphery of the bottom, the periphery of the bottom and the lip laterally forming a co-mating joint extending laterally inwardly in a substantially flat configuration, the second portion of the top comprising a raised portion extending around the top adjacent and inside a majority of the peripheral lip portion, the third portion being a generally central laterally substantially flat portion curved longitudinally in correspondence to the longitudinal curve of the bottom to lay snugly against the bottom; and

the peripheral lip portions of the top and bottom adhesively bonded together forming a flat joining flange extending laterally outwardly around the periphery of the planing board, the bottom of the flange being co-planar laterally with the bottom of the planing board.

4,331,341

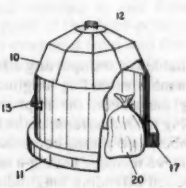
REFUSE RECEPTACLE PROTECTOR

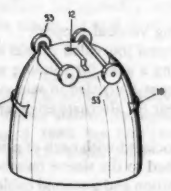
John A. McKeown, 2057 Morton St., Muskegon, Mich. 49441

Filed May 15, 1980, Ser. No. 149,911

Int. Cl.³ B62B *3/00, 9/04;* B65D *25/24*

U.S. Cl. 280—47.34 **8 Claims**





1. A refuse receptacle protector comprising a rigid hollow enclosure, said enclosure being closed at the top and open at the bottom and said enclosure having anti-tipping means integral therewith to resist tipping of said enclosure by an external force, whereby said protector is useable to protect refuse at any desired location with no special preparation of said location, wherein said enclosure is generally dome-shaped with at least one handle on the external sidewall thereof and said anti-tipping means comprises a weighted rim around the periphery of the bottom of said enclosure.

6. A refuse receptacle protector comprising a rigid hollow enclosure, said enclosure being closed at the top and open at the bottom and said enclosure having anti-tipping means to resist tipping of said enclosure by an external force and transporting means attached to the top of said enclosure whereby said protector is useable to transport refuse receptacles in the inverted position.

4,331,342

TANK WAGON

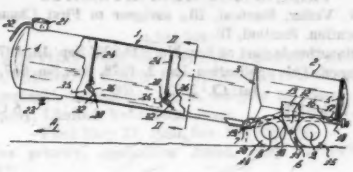
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed May 5, 1980, Ser. No. 146,653

Claims priority, application Netherlands, May 8, 1979, 7903573

Int. Cl.³ B60P *3/24*

U.S. Cl. 280—5 C **20 Claims**



1. A tank wagon comprising a frame movable over the ground and a tank for transporting liquid material being mounted on said frame, partition means in said tank that divides material in the tank into portions, said partition means having a lower opening and flap means positioned to at least partly close the opening during deceleration of the wagon's forward travel to dampen the flow of material in the tank in only one direction, said flap means being hinged to the remainder of said partition means and pivotable about a horizontal pivot axis that extends transverse to the direction of wagon travel, said pivot axis being located above the flap means said flap means being freely pivotably about the pivot axis when the tank is empty, the center of gravity of the flap means being located below said pivot axis and said flap means normally being pivoted by gravity at least partly open to expose the opening during the acceleration or the rest position of said wagon and allow liquid to flow from one side of the partition to the other.

4,331,343

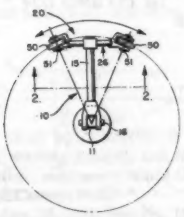
WHEEL CONSTRUCTION AND ARRANGEMENT

Willis G. Groth, Geneva, Ill., assignor to H. A. Phillips & Co., St. Charles, Ill.

Continuation of Ser. No. 928,720, Jul. 27, 1978, abandoned. This application May 27, 1980, Ser. No. 153,216

Int. Cl.³ B62D *21/00*

U.S. Cl. 280—80 R **8 Claims**



1. In a wheeled vehicle adapted to travel on a normal surface wherein said vehicle includes a frame, the improvement in a wheel construction and arrangement, comprising:

a. a wheel rotatable on a normally horizontal axis,

b. said wheel being mounted for rotation on a structure which extends rearwardly of the wheel relative to a forward direction of vehicle travel,

c. said structure being connected to the vehicle frame in pivotal relationship for tilting movement about a substantially horizontal tilt axis, and

d. said tilt axis extending below the axis of wheel rotation

between said axis of rotation and the surface on which the wheel travels,

e. tilting of said wheel about said tilt axis being effective to cause the vehicle to move in an arcuate path in the direction of tilt with the arcuate path having a radius determined by the degree of tilt.

4,331,344

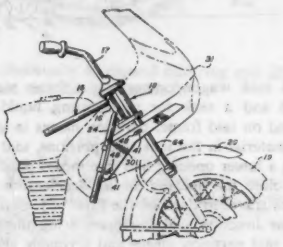
FAIRING MOUNTING APPARATUS

Craig W. Vetter, Rantoul, Ill., assignor to First Champaign Corporation, Rantoul, Ill.

Continuation-in-part of Ser. No. 723,920, Sep. 16, 1976, abandoned. This application Jan. 3, 1978, Ser. No. 867,189

Int. Cl.³ B62J *17/00*

U.S. Cl. 280—270 **6 Claims**



1. In combination with a motorcycle having a frame mounted fairing, said frame having a fork head with an axis on which the front wheel fork turns, the improvement comprising:

a disc carrier mounted on said frame in a plane at right angles to and intersecting said fork head axis; and

a disc rotatable with respect to said carrier and connected with the motorcycle fork to turn therewith, said disc extending transversely of the front wheel fork, below the fork head and above the front wheel, to block the flow of air and water upwardly along said fork.

4,331,345

IMPLEMENT WEIGHT TRANSFER

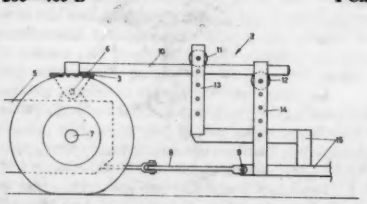
Malcolm L. Williams, Lot 15, Swanport Rd., Murray Bridge, South Australia 5253, Australia

Filed Nov. 5, 1979, Ser. No. 91,267

Claims priority, application Australia, Nov. 3, 1978, PD6628

Int. Cl.³ B60D *1/14*

U.S. Cl. 280—405 B **1 Claim**



1. An implement weight transfer hitch for transferring the weight from a trailed implement to a towing tractor having a rear axle adjacent the trailed implement, said hitch having a fore carriage adapted to be pivotally supported on the tractor to support at least a portion of the weight of the implement on the tractor, a draw bar on the implement connectable to the tractor for transmitting towing forces therebetween through a vertical pivot spaced rearwardly of the vertical plane of the rear axle, the fore carriage being vertically spaced above the draw bar and including telescopic means to allow relative pivotal movement of the tractor and implement in a vertical plane and to prevent substantial towing forces from being transmitted therethrough, characterized in that said telescopic means includes an extension member connectable to a turntable mounted on said tractor at or adjacent a plane including the rear axle of said tractor, said extension member being supported by a pair of rollers mounted in brackets attached to said fore carriage, said rollers being longitudinally spaced along said member and in contact with opposite sides thereof, said forward most roller beng positioned on an upper surface of the extension member and the other roller on a lower surface thereof, said brackets including means to adjustably position said rollers in a vertical plane.

4,331,346

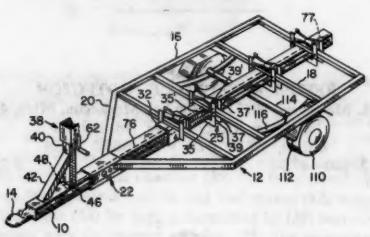
TELESCOPING TRAILER FOR BOATS AND THE LIKE

Klemens C. Walters, 1825 Foxcroft La., Allison Park, Pa. 15101

Filed Mar. 17, 1980, Ser. No. 130,856

Int. Cl.³ B60P *3/10*

U.S. Cl. 280—414.1 **7 Claims**



1. In a trailer suitable for transporting a boat or the like and having a tongue member extending longitudinally of the main frame for drafting the trailer, the improvement comprising means for telescoping the main frame of the trailer with respect to the tongue member, said means comprising:

A. at least one sleeve member having a substantially rectangular cross section extending longitudinally of said frame and adapted to slidably receive said tongue member;

B. winch means secured to said tongue member and comprising:

i. an upstanding vertical support;

ii. a pair of drums journaled in said support, each of said drums having a gear for rotating said drum;

iii. turning means journaled in said support and including a driving gear for alternate engagement with a gear of a drum; and

iv. a cable associated with each of said drums, a first cable being attached to the sleeve member of the main frame at a first position and a second cable being adapted to be connected to the bow of a boat or the like;

C. first pulley means vertically disposed with respect to the winch means;

D. a second pulley means positioned at an end of the tongue member remote from the support said first cable extending about said first and second pulley means and said drum and attached to said sleeve member at a second position; and

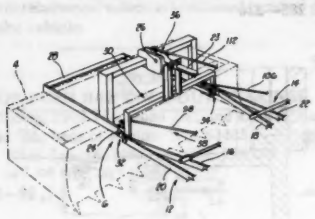
E. a pulley support secured to a rear end of the tongue member and accommodated within an opening in the tongue member for rotatably retaining the second pulley means, said pulley support being biased in a direction away from the vertical support of the winch means such that the first cable is maintained under tension

whereby when the turning means is engaged with one drum and rotated, the main frame of the trailer telescopes with respect to the tongue member and when the turning means is engaged with the other drum, a boat or the like may be moved with respect to the trailer.

4,331,347
THREE-POINT HOOKUP APPARATUS

Lem A. Madden, 5530 Blue Lake Dr., Norman, Okla. 73069

Filed Feb. 19, 1980, Ser. No. 122,238
Int. Cl.[3] B60D *1/00*
U.S. Cl. 280—415 A 24 Claims



1. An apparatus for allowing a person to connect an implement having first, second and third engageable portions to a tractor having an operator's seat in which the person is located and further having a three-point attachment system, said apparatus comprising:

a rigid frame having means for removably connecting said frame to each of the three points of the three-point attachment system;

a first latch means attached to said frame and associated with the first point of the three-point system;

a second latch means attached to said frame and associated with the second point of the three-point system;

a connector means attached to said frame and associated with the third point of the three-point system;

a first control rod extending from said first latch means to a first position adjacent the operator's seat;

a first mounting means for movably mounting said first control rod to the tractor at said first position;

a second control rod extending from said second latch means to a second position adjacent the operator's seat;

a second mounting means for movably mounting said second control rod to the tractor at said second position;

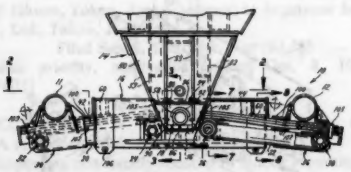
a third control rod extending from said connector means to a third position adjacent the driver's seat; and

a third mounting means for movably mounting said third control rod to the tractor at said third position.

4,331,348
VEHICLE SUSPENSION

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Jan. 9, 1980, Ser. No. 110,778
Int. Cl.[3] B60G *5/00*
U.S. Cl. 280—686 20 Claims

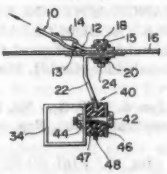


19. In a vehicle suspension assembly for mounting a vehicle chassis to a vehicle axle: a wheel axle seat and a vehicle chassis load support; a torque arm pivotally attached to the axle seat and to the load support; and elongate spring means extending between the load support and the wheel axle seat, means on the load support and the axle seat to support the spring means; means to apply the load from the load support at a predetermined point on the spring means between the supports therefor on the load support and the axle seat and hence to apply load to the axle seat; and means located between the load applying means and the spring means support on the axle seat to engage the spring means and to apply a predetermined portion of the load of the load support to the spring means in opposition to the load of the load support, at a point on the spring means spaced from the said predetermined point.

4,331,349
STRUCTURE FOR MOUNTING A SAFETY BELT ARRANGEMENT ONTO AN AUTOMOTIVE VEHICLE

Jun Funahashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 27, 1980, Ser. No. 153,779
Claims priority, application Japan, May 31, 1979, 54-77410[U]
Int. Cl.[3] B60R *21/10*
U.S. Cl. 280—801 6 Claims



1. A structure for securing one end of a safety belt onto a vehicle body, comprising in combination:

a connector for fastening said one end of said safety belt onto a floor panel of said vehicle body, said connector being fixed onto an upper surface of said floor panel;

a single, plate-shaped bracket interposed between said floor panel and a vehicle frame, one end of said bracket being secured onto a lower surface of said floor panel, the other end of said bracket being secured onto said vehicle frame; and

isolating means made of elastically deformable material, said isolating means being fixedly secured at at least one end of said bracket so that it can isolate said one end of said bracket from said floor panel or said other end of said bracket from said frame;

thereby absorbing a force applied thereto and isolating said floor panel and said safety belt from vibration of said vehicle frame.

4,331,350
SEAT BELT ANCHOR

John W. Frankila, Sterling Heights, and Robert M. Kremer, Fraser, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

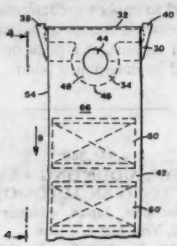
Filed Aug. 25, 1980, Ser. No. 180,545
Int. Cl.[3] A62B *35/02*
U.S. Cl. 280—801 14 Claims

1. A seat belt anchorage member adapted to attach seat belt webbing to a structural part of a vehicle, said anchorage member comprising:

a first surface having a width at least as wide as the width of said seat belt webbing, said first surface adapted to contact said seat belt webbing when said webbing is looped about said anchorage member; and

mounting means spaced from said first surface and comprising an aperature, said aperature adapted to receive a mounting member for mounting said anchorage means to

said structural part of said vehicle, said aperture adapted to communicate with openings in said loop of webbing,



said anchorage member being subjected to compressive forces when a load is placed on said seat belt webbing.

4,331,351

MOUNTING ARRANGEMENT FOR A SUCTION NIPPLE ON A VACUUM CLEANER

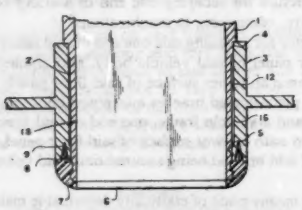
Erhard Sobczyk, Schwelm, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,646

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 7917533[U]

Int. Cl.³ F16L *00/00*

U.S. Cl. 285—7 **4 Claims**



1. A mounting arrangement of a suction nipple on a vacuum cleaner comprising: a vacuum cleaner housing having an opening therein, said opening being defined by an elongated projection having a first and a second end; a suction nipple having an elongated portion extending through said elongated projection, the arrangement comprising means for supporting said elongated portion in said opening, including a first bearing surface on said elongated portion arranged in contact with said first end of said elongated projection and a second bearing surface on said elongated portion arranged in contact with said second end of said elongated projection, said first bearing surface being vertically spaced from said second bearing surface and said elongated portion and said elongated projection having reduced diameters between said bearing surfaces to form a clearance between said elongated portion and said elongated projection; means adjacent said first bearing surface to limit penetration of said nipple into said opening; and an elastic annular sealing ring means clipped on the end of said elongated portion adjacent said second bearing surface; said elongated projection having groove means in the end adjacent said second bearing surface, said groove means being normal to said second bearing surface, said sealing ring means partially extended into said groove means to thereby hold said elongated portion in said elongated projection and form a seal between said elongated projection and said elongated portion and simultaneously permit a slight turnable movement between said elongated projection and said elongated portion.

4,331,352

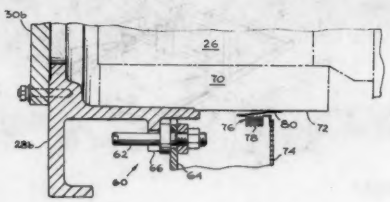
HEAT EXCHANGER SUPPORT SYSTEM PROVIDING FOR THERMAL ISOLATION AND GROWTH

Richard F. Graves, Huntington Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,117

Int. Cl.³ F16L *21/00*

U.S. Cl. 285—226 **20 Claims**



1. A thermally isolating member for joining a high temperature component to a support structure with minimal heat transfer comprising:

a circumferential member having a thin metal wall to restrict the heat flow; and

means for connecting the thin-walled member at opposite ends respectively to the high temperature component and the support structure, said means further including means for accommodating relative movement from thermal growth of the high temperature component;

the circumferential member comprising a continuous thin-walled metal collar in combination with a circumferential bellows portion which is attached to the support structure, the metal collar being joined at one end to the high temperature component and at the other end to the circumferential bellows portion at a point remote from the support structure.

4,331,353

LOCK RELEASING DEVICE FOR LOCKS OF A FUEL OIL TANK LID AND A TRUNK LID OF A VEHICLE

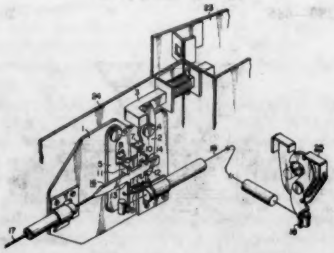
Yasuhiro Yazawa, Yokohama, and Kishiro Muroi, Sagamihara, both of Japan, assignors to Ohi Seisakusho Co. Ltd., Yokohama, Japan

Filed Nov. 30, 1979, Ser. No. 98,855

Claims priority, application Japan, Dec. 13, 1978, 53-172011[U]

Int. Cl.³ E05C *9/02, 13/08*

U.S. Cl. 292—28 **8 Claims**



1. A lock releasing device for alternately releasing the locks of a fuel tank lid and a trunk lid of a vehicle, comprising:

a base plate mounted to a body of the vehicle;

a first lever for releasing the first of said locks and a second lever for releasing the second of said locks, each of said levers are pivotally mounted to the base plate;

means for biasing each of said levers in a direction opposite to the direction of movement of the other lever;

an actuating rod which pushes selectively the first lever or the second lever against the biasing means so that the first lever releases the first lock or the second lever releases the second lock; and

a handle for actuating the actuating rod via a cable connected therebetween, which is positioned beside a driver's seat in the vehicle.

4,331,354

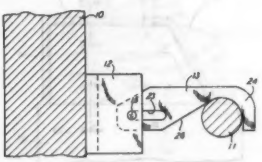
DOOR PUSH BAR LOCK-OUT RETAINER

Curtis L. Helding, 2803 Fleetwood Dr., and Carl R. Larrabee, 4234 Wood Rd., both of Racine, Wis. 53403

Filed Jun. 16, 1980, Ser. No. 159,834

Int. Cl.³ E05C *15/02*

U.S. Cl. 292—92 **4 Claims**



1. A door push bar lock-out retainer, comprising a hingedly mounted door having a push bar swingably mounted on said door and spaced from said door and extending horizontally and being movable for swinging toward and away from said door and being in a door-unlocked position when swung in toward said door, a member swingably attached by means to said door on a horizontal pivot axis and including an extending end having a downwardly facing hook, said member being shaped and of a length sufficient to engage the side of said bar faced away from said door to thereby engage and secure said push bar inwardly towards said door in the push bar swung-in door-unlocked position, and said means attaching said door and said member having a slot which extends in the direction of the length of said member and is of a length sufficient to retract said hook toward said door to allow said hook to be swung past and clear of said push bar and thereabove and for subsequently positioning said hook downwardly onto said push bar in the push bar secured position.

4,331,355

TEMPORARY LOCKING DEVICE

Toyoji Okuno, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,285

Claims priority, application Japan, Oct. 8, 1979, 54-138074[U]

Int. Cl.³ E05C *17/56*

U.S. Cl. 292—251.5 **4 Claims**

1. A temporary locking device comprising:

a supporting box fixedly secured to a door mounting frame,

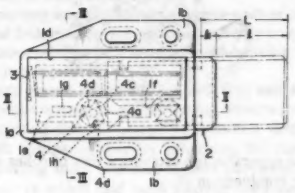
a drive element attached with a catcher as a magnet at least at its front end and slidably inserted through the opening of said supporting box elastically by a spring disposed in said supporting box for projecting said drive element from said supporting box,

a driven element rotatably supported at the internal end of said drive element and including at least two substantially V-shaped recesses symmetrically formed thereon,

a guide groove formed on the inner wall surface of said supporting box for said driven element for slidably engaging said driven element,

a rotating projection disposed at the internal end of said guide groove for eccentrically contacting said driven element at the depressing end of said drive element into said box to thereby rotate said driven element at its predetermined angle, and

a rotating and engaging extension disposed at the internal end of said guide groove for eccentrically contacting said



driven element to retain said driven element when said drive element is slightly moved forwardly from its depressing end and contacting said driven element to rotate in the direction for guiding itself into said guide groove when said drive element is moved forwardly after being again depressed into said box, both said rotating projecting and said rotating and engaging extension being faced oppositely at predetermined angle with respect to the sliding direction of said drive element.

4,331,356

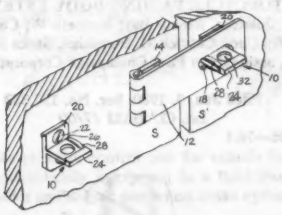
HASP RETAINING DEVICE

Brian F. Noel, Stuart, Fla., assignor to Voyager Marine Products, Inc., Stuart, Fla.

Filed Feb. 20, 1980, Ser. No. 123,067

Int. Cl.³ E05C *19/08*

U.S. Cl. 292—281 **5 Claims**



1. In a hasp, including a hinged, slotted part and a staple, where the staple is a rigid member which cooperates with the slot in the hinged part, the improvement comprising:

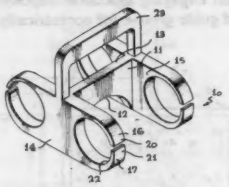
retaining means on said staple comprising:

an arch on at least one side of said staple and extending from said staple near one end of said staple to said staple near the other end of said staple, said arch being deformable to allow the perimeter of said slot to slide over the staple and said arch when deformed, the height of said arch, when not deformed, being such that said arch retains said hinged slotted part on said staple.

4,331,357
ROLLER SKATE TOTE

Robert A. Contreras, 2305 Curtis Ave., Redondo Beach, Calif. 90278

Filed Sep. 26, 1980, Ser. No. 191,262
Int. Cl.³ A47F 7/08; B65D 71/00
U.S. Cl. 294—145 1 Claim

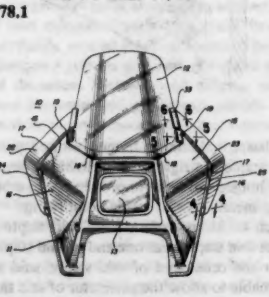


1. A tote apparatus for carrying a pair of roller skates comprising the combination of:
an elongated central body member;
securement means carried on the opposite ends of said central body member and extending normal thereto;
said securement means having holding means at respective ends thereof;
each of said holding means incorporating releasable means for selective retaining engagement with a wheel of the roller skate;
said releasable means includes a circular opening for insertably receiving said wheel and said opening is partially defined by a pair of curved elements extending from opposite sides of a semicircular portion so that their ends terminate in spaced apart relationship;
said curved elements are pliable so as to be flexed to snap-lock in engagement with said wheel;
said securement means and said central body member are integrally formed to provide a unitary juncture construction;
said central body member includes lower and upper edges reinforced by having its lower edge curved to form an arch and its upper edge flat in a linear construction; and
a U-shaped handle having opposite ends joined with said juncture construction of said central body member with said securement means at an area mid-way between said respective ends of said securement means.

4,331,358
MOTORCYCLE FAIRING BODY EXTENDER

Randall K. Johnson, Morro Bay; Kenneth W. Cummings, San Luis Obispo, and Charles M. Perethian, Santa Margarita, all of Calif., assignors to First Champaign Corporation, Rantoul, Ill.

Filed Jun. 9, 1980, Ser. No. 157,333
Int. Cl.³ B62J 17/00
U.S. Cl. 296—78.1 11 Claims

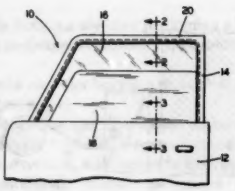


1. A lateral extender to be mounted on a motorcycle fairing which has a fairing body carried on a motorcycle in front of the rider with a windshield extending upwardly from the top of the fairing body, the fairing body having lateral edges which are spaced at either side of the motorcycle rider, said lateral extender comprising:
a panel having an inwardly directed edge which mates with the lateral edge of the fairing and a surface which blends with the fairing surface, the extender increasing the lateral dimension of the fairing and the protection of the rider; and
means for securing the lateral extender to the fairing body.

4,331,359
WINDOW SHIELD FOR VEHICLE BODY

Steve S. Sheldon, Barboursville, W. Va., assignor to Skipura Enterprises, Inc., Barboursville, W. Va.

Filed Dec. 12, 1979, Ser. No. 102,871
Int. Cl.³ B60J 1/16, 1/20
U.S. Cl. 296—146 14 Claims

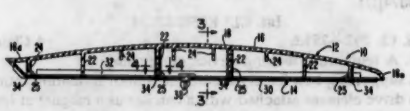


1. A window and window shield system for a vehicle body, comprising a supporting panel having first and second channels each adapted to receive a window structure; an inner window and an outer window located in said panel and extending outwardly through said first and second channels, respectively to enclose an access opening in the body; said inner window being formed of a transparent plastic or glass, said outer window being formed of a penetration resistant material; switch means; motor means responsive to said switch means and coupled to said inner and outer windows for selectively extending and retracting said inner window relative to said panel between a closed position wherein said inner window is extended outwardly from said panel to enclose said access opening and an open position wherein said inner window is retracted into said panel, said switch means including means for enabling opening of said inner window only when the outer window is open.

4,331,360
RESILIENT ACCESSORY FOR SEAT OR THE LIKE

Gerald L. Roudybush, Butler, and Richard A. Wilson, Pittsburgh, both of Pa., assignors to Magee Plastics Company, San Mateo, Calif.

Filed Oct. 27, 1980, Ser. No. 200,813
Int. Cl.³ A47C 1/02, 7/54
U.S. Cl. 297—422 10 Claims



1. A resilient support comprising: a first member of resilient material, said first member having a wall and a pair of spaced sides integral with the wall, the outer margins of the sides defining an opening in the first member opposite to the wall, there being a number of spaced stops on the first member and extending toward the opening; a second, generally rigid mem-

ber between the sides of the first member; and post means carried by the first member and extending through the second member for interconnecting the members, the outer edge margins of the stops being in sufficiently close proximity to the inner surface of the second member to engage the inner surface of the second member in load bearing relationship with respect thereto when a force is exerted on the first member.

4,331,361

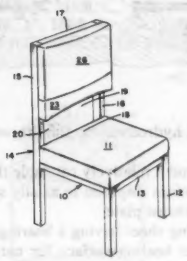
POSTURE CHAIR BACK

Daniel Krakauer, Great Neck, N.Y., assignor to Kay Springs, Incorporated, Syosset, N.Y.

Filed May 22, 1980, Ser. No. 152,509

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—460 **10 Claims**



1. A chair having a seat positioned a suitable seating distance above floor level and a seat back associated with said seat to accommodate the back of a chair occupant, said seat back having a first back supporting means spaced vertically from said seat having a substantially horizontal thoraco-lumbar-joint-engaging projecting surface, and a second back supporting means spaced vertically above said first back-supporting means and protruding convexly forwardly in the horizontal plane above said seat beyond said thoraco-lumbar-joint-engaging projecting surface in its uncompressed state, to urge the thoracic spine forwardly whereby to bring the full spine in a seated position into minimal curvature and induce low stress posture in the spine of the chair occupant.

4,331,362

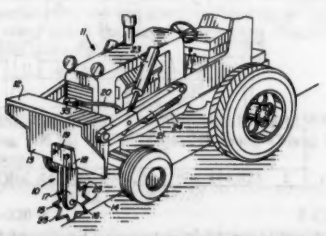
PORTABLE CUTTING DEVICE FOR ATTACHMENT TO BLADES OF EARTH MOVING MACHINES

Carroll G. Talbert, 6930 W. Hazelwood, Phoenix, Ariz. 85033

Filed Aug. 15, 1980, Ser. No. 178,399

Int. Cl.³ E01C *23/09*

U.S. Cl. 299—37 **6 Claims**



1. A pavement cutting device for making cuts in asphalt pavement, said pavement cutting device comprising in combination:

(a) a cutting disc, said cutting disc having a plurality of cutting teeth disposed uniformly along the periphery of said cutting disc, each of said cutting teeth having a sharp point and two cutting edges which join at said sharp point, said cutting edges of each of said cutting teeth each adjoining said cutting edge of an adjacent one of said cutting teeth;

(b) first and second fork members for rotatably supporting said cutting disc;

(c) axle means extending through said cutting disc for engaging lower end portions of said first and second fork members for supporting of said cutting disc and allowing free rotation of said cutting disc;

(d) connecting means attached to upper ends of said first and second fork member means for removably connecting said pavement cutting device to an earth moving blade of an earth moving machine;

(e) impact means supported by said first and second fork members for repetitively producing downward impact on said cutting disc to pound said cutting teeth into said asphalt pavement, thereby enhancing the penetration of said cutting teeth into said asphalt pavement, increasing the rate at which said earth moving machines can move along said asphalt pavement while said pavement cutting device cuts said asphalt pavement, wherein said impact means includes a jack-hammer means, said pavement cutting device including a block from which said first and second fork members extend, a stud extending rigidly upward from said block, said jack-hammer means having a chuck for receiving said stud to support said jack-hammer mechanism on said stud,

whereby said cutting disc cuts said asphalt pavement as said earth moving machine moves along said asphalt pavement.

4,331,363

BRAKE PRESSURE CONTROL UNIT FOR VEHICLE BRAKE SYSTEMS

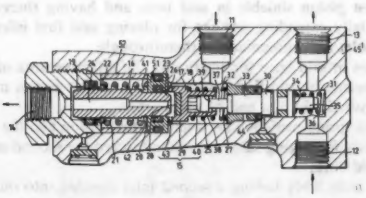
Volker Berisch, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,826

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926499

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **10 Claims**



1. A brake pressure control unit for vehicle brake systems which is hydraulically interposed in a fluid line between a master cylinder and at least one wheel brake cylinder comprising:

a housing having a stepped housing bore coaxial of a longitudinal axis;

at least one stepped piston disposed in said housing bore coaxial of said axis acted upon by the force of a control spring and including an axial passageway therein communicating with said master cylinder and said brake cylinder;

a sleeve disposed in said housing bore coaxial of said axis abutting on a step in said housing bore and guiding the smaller diameter portion of said stepped piston;

a screw-in cap coaxial of said axis closing said housing bore and having a coaxial bore therein guiding the large diameter portion of said stepped piston;

separate spacing means disposed in said housing bore coaxial

of said axis between adjacent end surfaces of said cap and said sleeve; and

a valve including a valve edge disposed at the end of said passageway in said smaller diameter portion of said stepped piston and a valve closure member disposed coaxially of said axis and spaced from said end of said passageway in said smaller diameter portion of said stepped piston.

4,331,364

HYDRAULIC PRESSURE CONTROL VALVE

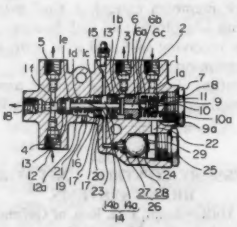
Naganori Koshimizu, and Masami Aono, both of Yokohama, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Apr. 14, 1980, Ser. No. 142,162

Claims priority, application Japan, Apr. 28, 1979, 54/58058[U]

Int. Cl.³ B60T 8/26

U.S. Cl. 303—24 F **3 Claims**



1. A hydraulic control valve comprising:

a main body having therein an axially extending bore having a first and second opposite ends, a first inlet opening into the first end of said bore, and a first outlet axially spaced from the first inlet and opening out of said bore;

a first piston slidable in said bore and having therein an axially extending passage for placing said first inlet and outlet in communication therethrough;

means in said bore for restricting the effective area of said passage in said first piston when said first piston moves toward said first end of said bore;

a first spring provided between the first piston and the main body for urging said first piston toward the second end of said bore;

said main body having a second inlet opening into the second end of said bore;

a second piston slidably disposed in said bore between said second inlet and said first piston and adapted to receive the pressure from said second inlet, said second piston having a piston rod extending axially in said bore for transmitting force from the second piston to the first piston;

an annular piston slidable in said bore and slidably mounted on said piston rod;

a second spring provided between said second piston and one side of said annular piston;

said bore having a pressure chamber therein on the other side of said annular piston from said second spring with one wall of said pressure chamber being constituted by the other side of said annular piston; and

an inertia valve connected between said pressure chamber and said first inlet for selectively placing said pressure chamber and said first inlet in communication.

4,331,365

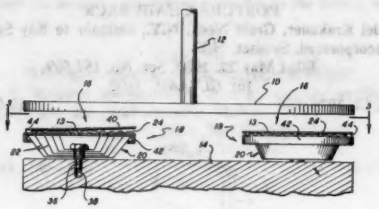
NESTED BELLEVILLE SPRING SUPPORT FOR COMPLIANT THRUST BEARINGS

William H. Miller, Jr., Albany, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jan. 2, 1980, Ser. No. 109,133

Int. Cl.³ F16C 32/06

U.S. Cl. 308—9 **7 Claims**



1. A compliant hydrodynamic fluid thrust bearing, comprising:

a thrust plate and a relatively rotatable thrust runner having a bearing surface disposed in axially spaced parallel relation to said thrust plate;

a flexible bearing sheet having a bearing surface facing said thrust runner bearing surface for carrying an axial load exerted by said thrust runner;

a resilient support means for supporting said bearing sheet, including a plurality of Belleville springs arranged in parallel with respect to said load, said springs being disposed in a nested bundle with one axial end of each spring facing and operatively supporting a portion of the load on said bearing sheet and the other axial end facing said thrust plate and transferring the modified load thereto.

4,331,366

COMBINED THRUST AND SUPPORT BEARING FOR TURBOGENERATORS

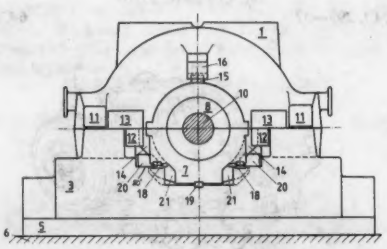
Wolfgang Dömer, Schneisingen, Switzerland, and Helmut Klepper, Einhausen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 8, 1980, Ser. No. 184,938

Claims priority, application Switzerland, Oct. 31, 1979, 9752/79

Int. Cl.³ F16C 17/10, 23/04, 35/02

U.S. Cl. 308—22 **3 Claims**



1. A combined thrust and support bearing for turbogenerators, comprising:

a bearing clock capable of being rigidly secured to a foundation;

a bearing housing displaceable in lengthwise direction of a shaft of the turbogenerator and located within the bearing block;

thrust bearing elements and support bearing elements arranged in said bearing housing;

said support bearing elements being arranged between said thrust bearing elements;

slide elements for supporting the bearing housing in the bearing block;

said slide elements enabling an axial displacement of the bearing housing in relation to the stationary bearing block;

guide elements for axially guiding the bearing housing; and

holddown elements for securing the bearing housing against tilting movements about the shaft axis.

4,331,367

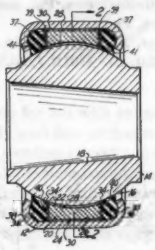
SEALED COMPOUND BEARING

William H. Trudeau, Brighton, and Joseph E. Smith, Birmingham, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Nov. 17, 1980, Ser. No. 207,257

Int. Cl.³ F16C *23/04, 27/02;* F16D *1/12*

U.S. Cl. 308—26 **27 Claims**



1. A bearing comprising an inner member having a peripheral surface of regular predetermined contour, an outer member having an inner surface of regular predetermined contour, a metallic ring insert disposed between the peripheral surface of the inner member and the inner surface of the outer member, said ring insert having an inner surface generally conforming to the peripheral surface of said inner member and a peripheral surface generally conforming to the inner surface of said outer member and said conforming surfaces each being normally separated by a relatively narrow space from its associated surface, a pair of thin metallic sealing rings each installed on one side of said ring insert and having a peripheral edge engaged with the inner surface of said outer member and an inner edge engaged with the peripheral surface of said inner member, a pair of resiliently deformable rings made each of elastomeric material and each disposed on one side of said ring insert, and means in said outer member holding said deformable rings under compression such as to firmly engage said deformable rings with a portion of the peripheral surface of said inner member, a portion of the inner surface of said outer member and a lateral surface of a corresponding sealing ring for firmly engaging the other lateral surface of said sealing ring with a lateral surface of said ring insert.

4,331,368

EASILY ASSEMBLED OR DISASSEMBLED DRAWER

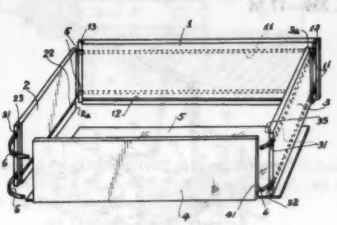
Wu Lien-Hsing, 2nd fl., No. 42, Lane 204, Sung Chiang Rd., Taipei, Taiwan

Filed Apr. 29, 1980, Ser. No. 144,023

Int. Cl.³ A47B *47/00*

U.S. Cl. 312—330 R **1 Claim**

1. An easily assembled or disassembled drawer comprising a vertical front plate, two vertical side plates, a vertical back plate and a horizontal bottom plate, said front plate being formed two horizontal tunnels within said plate and formed a horizontal groove near the bottom edge thereof and extending horizontally two extensions on both sides thereof to engage with said two side plates, each of said two side plates being respectively formed two horizontal tunnels therein and a groove near the bottom edge thereof and respectively extending an extension to engage with said back plate, said back being formed a groove near the bottom edge thereof, said bottom plate being inserted into grooves of all the vertical plates, two belts passing through said two horizontal tunnels within said vertical plates and fencing said vertical plates which have been



engaged with said bottom plate to be finally tightened and bound at said back plate, the improvement which comprises: said two belts being flexible and being made as thin as possible so that when assembling said vertical plates and said bottom plates, the outer feature of the assembled drawer will be compact without revealing the belt and allowance among the front plate and the side plates.

4,331,369

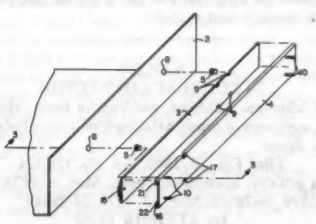
CHASSIS INTEGRATED SLIDE

Janos J. Lazar, Redwood City, and William B. Fazakerly, Saratoga, both of Calif., assignors to Scientific Micro Systems, Inc., Mountain View, Calif.

Filed May 22, 1980, Ser. No. 152,473

Int. Cl.³ A47B *88/00, 63/02;* F16C *29/00*

U.S. Cl. 312—334 **11 Claims**



1. A slide assembly for mounting a chassis relatively movable with respect to a rack comprising:

slide guide means for rigid attachment to the chassis, said slide guide means having two or more fixed studs,

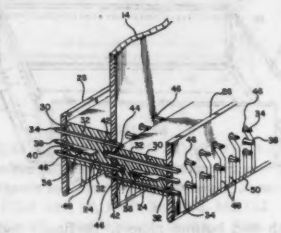
a floating slide means having a channel for slidably engaging said studs and for supporting said chassis, said floating slide means having face portions extending over the ends of said studs for holding said studs,

sheath means having a channel for slidably engaging said floating slide, said sheath means having means for rigid attachment whereby said chassis is relatively movable with respect to said rack by the translation of said floating slide member with respect to said slide guide means and by the relative translation of said floating slide member with respect to said sheath means.

4,331,370
CONNECTION SYSTEM FOR PRINTED CIRCUIT BOARDS

Howard W. Andrews, Hershey, and Robert F. Cobaugh, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 28, 1980, Ser. No. 144,706
Int. Cl.³ H05K *1/00*
U.S. Cl. 339—17 M **2 Claims**



1. A connection system for providing input-output signal paths for a printed circuit board having plated through holes, comprising:

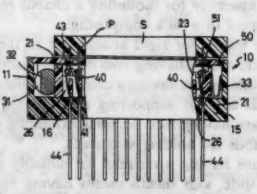
a. a pair of cards having one edge adapted for termination in a card-edge connector, and further having three rows of plated through holes with circuits extending between the holes and the one edge; and

b. a pair of modules formed from an insulative material and having two rows of spaced, conductive members embedded therein with the ends thereof projecting out of first and second opposing sides, and further having a shield of conductive material embedded in the insulative material between the two rows of conductive members with pins attached to the shield at spaced intervals and projecting out of a first of the two opposing sides, said pins and ends of the conductive members projecting out of the first opposing side being inserted into the three rows of plated through holes in the cards so that upon inserting the ends of the conductive members projecting out of the second opposing side of the modules into the plated through holes in a printed circuit board input-output signal paths are provided for said board to and from the one edges of the cards through said modules.

4,331,371
ELECTRICAL CONNECTOR

Yoshiaki Ichimura, Akishima, and Yusaku Inoue, Hino, both of Japan, assignors to Japan Aviation Electronics Industry, Ltd., Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,521
Claims priority, application Japan, Mar. 9, 1979, 54-28020; Mar. 9, 1979, 54-28021; Mar. 13, 1979, 54-28916
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R **8 Claims**

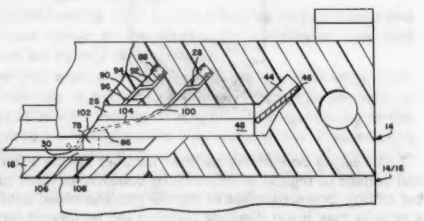


1. An electrical connector comprising a housing formed as a single piece of dielectric material having a plurality of recesses separated from each other by a partition, a slider in each of said recesses, a plurality of electrical contact terminals arranged in said slider, driving means for moving said sliders along said recesses, and a cover plate having a plurality of openings for guiding pins to be connected, each said electrical terminal consisting of a single member formed to include a mounting shank portion, a resilient web portion and a blade portion, said web portion being formed at a slight angle of inclination with respect to said shank portion, said blade portion being provided with an aperture including an enlarged portion and a narrow slot, each said slider having a plurality of protruding shoulders, and said inclined web portion of said terminals being driven by said shoulders of the slider whereby said enlarged portion of the aperture is aligned with said opening in said cover plate.

4,331,372
SUBSTRATE CONNECTOR SYSTEM UTILIZING A CONTACT ACTUATING BAR

Edward J. Bright, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 24, 1980, Ser. No. 143,215
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—74 R **3 Claims**



1. A connector for electrically connecting the circuits on one side of a substrate to the circuits on a printed circuit board, comprising:

a. an elongated housing having a recess in and along one side for receiving an edge of a substrate, and further having a plurality of spaced-apart cavities opening out into a front wall of the recess and extending back into the housing at an angle oblique to the longitudinal axis thereof and with the oblique direction being towards a first end of the recess, and further having support means at each end of the recess for supporting an actuating bar;

b. a plurality of spring members each having a body section with a leg depending from a lower edge and an elongated, resilient cantilever beam extending away from a lateral edge with the free end of the beam having a contact surface thereon, said body further having means thereon for securing the spring member in one of said cavities with the leg depending from the housing for insertion into a printed circuit board and with the cantilever beam extending out into the recess at substantially said oblique angle so that the contact surface thereon may engage a substrate which may be positioned therein; and

c. an elongated actuating bar having bosses spaced along one surface and slidably positioned in the recess adjacent the face thereof with the ends of the bar received by said support means and with the bosses extending downwardly between the cantilever beams

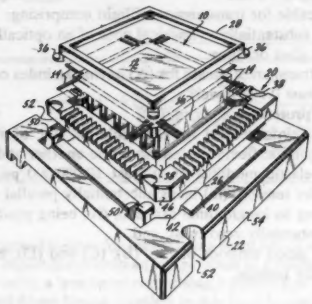
so that as the bar is moved parallel to the housing axis and towards the first end of the recess, the bosses bear against and resiliently bend the beams in towards the front wall of the recess and out of engagement with the substrate which may be positioned therein.

4,331,373

MODULAR SYSTEM WITH SYSTEM CARRIER, TEST CARRIER AND SYSTEM CONNECTOR

Eugene F. Demnianiuk, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 24, 1980, Ser. No. 133,100
Int. Cl.[3] H05K *1/02*
U.S. Cl. 339—91 R 6 Claims



1. A modular system for use with an integrated circuit flat-package having a body with four orthogonal sides and substantially straight leads extending laterally from said four sides of said body, said modular system comprising:

a carrier frame having four orthogonal sides defining a hole for receiving said body of said flat-package, said four sides having grooves extending outwardly from said hole for receiving said leads;

means for attaching said flat-package to said carrier frame, with said body being in said carrier frame hole and said substantially straight leads being in said grooves to prevent damage to said leads during handling;

a system connector having four orthogonal sides for overlying a printed circuit board surface, said system connector sides defining a hole that also overlies said printed circuit board surface for receiving said carrier frame with said flat-package attached thereto;

electrical conductors in said system connector for rigid attachment to said printed circuit board surface and aligned in said four system connector sides with said leads in said carrier frame grooves;

said system connector including tab means for engaging said carrier frame to replaceably secure said carrier frame and attached flat-package in said hole of said system connector with said electrical conductors in contact with said leads.

4,331,374

COAXIAL TERMINATION FOR CABLE IN-LINE ELECTRONIC APPLICATIONS

Raymond J. Phillips, Oakdale, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 24, 1980, Ser. No. 171,860
Int. Cl.[3] H01R *4/22*; H02G *15/02*
U.S. Cl. 339—177 E 10 Claims

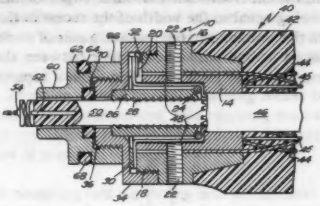
1. A coaxial cable terminator comprising:

a housing having a keying slot, said housing having an axial aperture adapted to receive a coaxial electrical cable;

a closure ring adapted to be inserted in the axial aperture of said housing;

a slotted dielectric clamp having a gripping inner surface adapted to abut said closure ring in the axial aperture of said housing;

a washer having a key adapted to mate with said keying slot of said housing; and



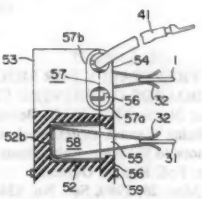
a cap having an axial aperture, said cap adapted to mate with said housing with the axial aperture of said cap aligned with the axial aperture of said housing.

4,331,375

ELECTRICAL CONTACT ASSEMBLY

Seietsu Takamatsu, Hamura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 21, 1979, Ser. No. 96,410
Claims priority, application Japan, Nov. 28, 1978, 53-146066; May 28, 1979, 54-70587[U]
Int. Cl.[3] H01R *4/48*
U.S. Cl. 339—210 R 5 Claims



1. In an electrical contact assembly used for a circuit breaker of the type comprising a U-shaped contact, a bar conductor to be connected to said U-shaped contact, and a holder provided with a recess for receiving said U-shaped contact, wherein said U-shaped contact includes end portions near its opening which are narrowed to form contacting portions between which said bar conductor is to be clamped when said U-shaped contact and said bar are engaged, the improvement which comprises conductive members disposed on both sides of said U-shaped contact and electrically connected thereto so that when said U-shaped contact and said bar conductor are engaged, currents passing through said conductive members substantially symmetrically flow in a direction opposite to a flow direction of currents passing through the sides of said U-shaped contact, said conductive members being firmly in contact with the walls of said recess provided in said holder.

4,331,376

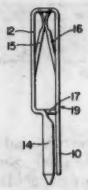
ELECTRIC CONNECTORS

Russell A. Leather, Perth, Scotland, assignor to Ferranti Limited, Cheshire, England

Continuation of Ser. No. 29,343, Apr. 12, 1979, abandoned, which is a continuation of Ser. No. 895,971, Apr. 13, 1978, abandoned. This application Apr. 16, 1980, Ser. No. 140,682
Claims priority, application United Kingdom, Apr. 16, 1977, 15879/77
Int. Cl.[3] H01R *13/12*
U.S. Cl. 339—258 R 6 Claims

5. A contact for insertion into a recess in a housing to form part of an electric connector which includes a terminal mem-

ber, a pair of spaced parallel support members each attached at one end to the terminal member and joined at the other end by a web, the distance between the outer edges of the support members being equal to the width of the recess in the housing into which the contact is to be inserted, a pair of contact members arranged in line with one another between the pair of support members and each extending from a separate bridge



between the pair of support members, a tongue extending from one of the members of the group comprising the terminal member and the web, and a cooperating aperture formed in the other member of the group, with the tongue fitting across the aperture at the said opposite end of the recess and engaging the said cooperating aperture in the contact so as to form a good electrical connection between the web and the terminal member.

4,331,377

TERMINAL, PREFERABLY FOR MOUNTING ON CIRCUIT BOARDS OF PRINTED CIRCUITS

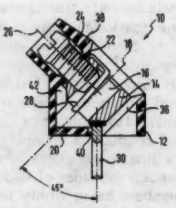
Walter Ebbinghaus; Norbert Weisbrodt; Bernd Optenhövel, all of Hanau, and Heinz Wennel, Bruchköbel, all of Fed. Rep. of Germany, assignors to Webster, Ebbinghaus & Co. (WECO), Hanau am Main, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,329

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911972

Int. Cl.³ H01R 9/10

U.S. Cl. 339—272 A **14 Claims**



1. A terminal, preferably for mounting on circuit boards of printed circuits, comprising an insulating case and a terminal body detachably arranged in said insulating case, said case having a base surface adapted to parallel a circuit board upon a mounting of the terminal thereon, said terminal body having a beveled edge parallel to said base surface, a conductor socket extending into said terminal body through a surface remote from said beveled edge, said socket having an axis at an acute angle to the plane of the beveled edge, a retaining screw threaded in said body and intersecting said socket, and a tab rigid with said beveled edge and projecting outwardly therefrom at an acute angle to the axis of the socket and through said base surface of the case.

4,331,378

REINFORCED OPTICAL FIBER CABLE WITH GLASS OR SILICA CORE

Martval J. Hartig, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 734,749, Oct. 22, 1976, abandoned. This application Mar. 22, 1979, Ser. No. 22,844

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.23 **14 Claims**

1. A cable for transmission of light comprising:

(A) a substantially cylindrical core of an optically transparent glass or silica;

(B) a transparent sheath for (A) having an index of refraction at least 0.1% lower;

(C) a protective layer on (B);

(D) a reinforcement for the cable, on (C), of at least two polymeric fibers spaced from one another and (i) having an elastic modulus of at least 10,000,000 psi, (ii) being under tension, (iii) being substantially parallel to the core along its longitudinal axis and, (iv) being positioned with substantially zero twist; and

(E) a jacket exterior of (A), (B), (C) and (D), holding (D) under tension.

4,331,379

OPTICAL CABLE WITH THIXOTROPIC FILLING COMPOUND

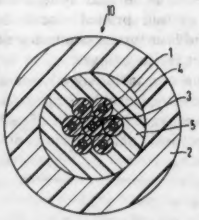
Ulrich Oestreich, Munich; Günter Zeidler, Germering, and Gernot Schöber, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,962

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907704

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.23 **14 Claims**



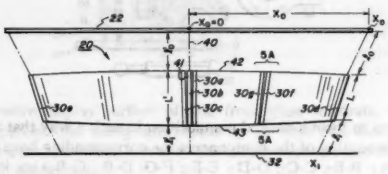
1. In a strand element for an optical cable, said element consisting of several light waveguide fibers for light wave transmission and a protective casing which loosely surrounds the fibers, the interior diameter of the casing being larger than the exterior diameter of a hypothetical cylinder surrounding the fibers, the improvements comprising each of the fibers being surrounded by a layer of softly elastic material, said fibers being stranded with one another with a back twist with a long length of lay in a range of between 50 and 500 mm, said protective casing being a hard protective casing capable of resistance, and the space between the optical fibers and the hard protective casing being filled with an easily shapeable filling compound consisting of thixotropized oils, said filling compound remaining soft and having no tendency towards aging, melting or freezing.

4,331,380

GRADIENT INDEX LENS ARRAY HAVING REDUCTION PROPERTIES

James D. Rees, Pittsford; David B. Kay, Rochester, and William L. Lama, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1980, Ser. No. 151,994
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.25 24 Claims



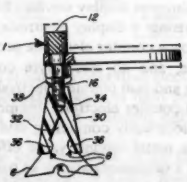
1. In an optical system for transmitting an image of an object lying in an object plane onto an image plane at a magnification other than unity, a lens array comprising a plurality of gradient index optical fibers bound together in side by side relationship, the fibers arranged so that those in the center of the array have their axes substantially perpendicular to the object and image plane while adjoining fibers are progressively tilted in fan-like fashion towards the ends of the array so that their axes increasingly depart from said substantially perpendicular orientation, said fibers having lengths which vary from the center of the array out to the ends, the fibers in the array center being of maximum length while adjoining fibers progressively decrease in length out to the ends of the array whereby each fiber end is separated from the object and image plane by prescribed distances chosen to provide the required magnification.

4,331,381

MAGNIFYING DEVICE

Radcliffe W. Hunter, 5000 S. Cornell, Chicago, Ill. 60615

Filed Jun. 16, 1980, Ser. No. 159,586
Int. Cl.³ G02B 27/02
U.S. Cl. 350—116 1 Claim



1. A magnifying device, adapted for use on measuring instruments of triangular cross section, comprising: a support member comprising:

a head rotatable by 360° in the horizontal plane;

a spacing component, adjacent to and having the same longitudinal axis as said head, said spacing component having a cross sectional area less than that of said head;

a threaded shaft, adjacent to and extending along said longitudinal axis from said spacing component;

magnifying means pivotally attached to said spacing component at right angles to the longitudinal axis of said support member to permit rotation of 360° in the horizontal plane, said magnifying means comprising:

a magnifying lens;

a frame which receives and secures the periphery of said magnifying lens;

means for pivotally attaching said frame to said spacing component of said supporting means, said pivotal attaching means permitting said frame to be rotated 360° in the horizontal plane about said head, said pivotal attaching means comprising a circular band whose inside cross sectional area is matched with the cross sectional area of said spacing component and whose thickness is slightly less than the longitudinal dimension of said spacing component, said circular band being integral with the periphery of said frame;

means for retaining said pivotal attaching means to the area of said spacing component, said retaining means comprising a nut which spirally cooperates with said shaft by means of matched threads;

and

means for receiving said measuring instruments, said receiving means being spirally attached to said shaft of said supporting member, said receiving means comprising a unitary block having:

a passageway having a cross section conforming to the contours of the top of said measuring instruments;

and

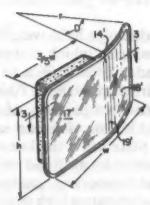
a cylindrical indentation having threads matched with those of said shaft for spirally securing said shaft to said unitary block.

4,331,382

WIDE-ANGLE MIRROR FOR AUTOMOBILES AND THE LIKE

Henry W. Graff, Elgin, Ill., assignor to Pathfinder Auto Lamp Company, Niles, Ill.

Filed Mar. 13, 1980, Ser. No. 130,077
Int. Cl.³ G02B 5/10
U.S. Cl. 350—303 4 Claims



1. A wide-angle rear vision mirror that has a single contoured surface which is not spherically contoured and that is expressly designed and adapted for use on the right side or left side of passenger automobiles, vans and the like vehicles, comprising a composite reflective surface including:

a single substantially planar reflective surface having a width and a height, said planar surface width being generally equal to said planar surface height;

a single contoured reflective surface having a contoured surface height and a contoured surface width, said single contoured reflective surface being continuous with said planar surface, said single contoured surface being an integral extension of said planar surface in a direction away from the vehicle, said contoured reflective surface being a single generally convex cylindrically contoured surface, said cylindrical contour being that of a right cylinder having a radius of curvature of 8 inches plus or minus about 12½ percent;

said composite reflective surface has a composite width that is substantially identical to the planar surface width plus the contoured surface width;

said composite reflective surface is straight-lined throughout its vertical extent;

said planar surface width is about 3/5 of said composite reflective surface width, and said contoured surface width is about 2/5 of said total reflective surface width;

said composite reflective surface has a composite height identical to said planar surface height and also to said contoured surface height;

said composite reflective surface is unseamed throughout its composite width; and

said composite reflective surface has a composite height and a composite width such that the wide angle rear vision mirror overlies substantially the entire surface area of an external automobile rear view mirror.

4,331,383

LIGHT-WEIGHT MIRROR

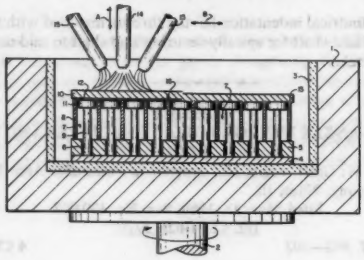
Uwe Christiansen, Gelnhausen-Meerholz, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,358

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929714

Int. Cl.³ C03B *29/02, 11/08;* G02B *5/08*

U.S. Cl. 350—310 8 Claims



1. A method of producing a light-weight mirror, particularly for astronomical telescopes, which comprises welding or fusing a mirror plate made of fused silica to a cellular or honeycombed supporting structure made of fused silica or quartzose material wherein there are a plurality of open passages at the interface between said mirror plate and said supporting structure and said mirror plate has a thickness of 2 to 20 mm and while said mirror plate is being fused or welded to said supporting structure said supporting structure, in turn, is supported by supporting elements which extend through said open passages and are provided at least at the end facing said mirror plate with a seating member which does not react with fused silica, and is planar, dome-shaped or curved on the surface facing said mirror plate and is close to but is in out of contact relationship said mirror plate whereby when said mirror plate is heated at its interface with said supporting member a domed or curved shape is imparted to said interface, and thereafter said supporting elements are removed.

4,331,384

OPTOMECHANICAL SYSTEM BUILT-UP OF BASIC ELEMENTS FOR MOVING OPTICAL ELEMENTS WITH A NUMBER OF DEGREES OF FREEDOM

Gyula Eisler, Budapest, Hungary, assignor to Mta Kozponti Fizikai Kutato Intezete, Budapest, Hungary

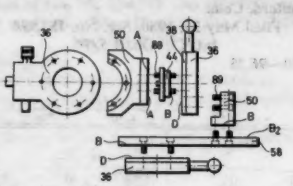
Filed Jun. 19, 1979, Ser. No. 49,651

Claims priority, application Hungary, Jun. 13, 1978, MA 2992

Int. Cl.³ G01B *9/02*

U.S. Cl. 350—321 7 Claims

1. An optomechanical system consisting of basic elements for moving and adjusting optical elements with a number of degrees of freedom, wherein said system comprises linear moving elements (31), rotating elements (36) and a plurality of different distance pieces having a uniform bore system, the bore system containing a plurality of kinds of bore groups (A to G) and the single bore groups comprising through bores (O), threaded bores (M) and setting bores (H) in cooperation with set pins (H_1), the distance pieces comprising at least two base plates (40), three different through plates (57, 58, 59) a centralizing underlay (44), a rectangular piece (54), a raising block (83), an underlay plate (86) as well as at least an assembled support (50) consisting of a base plate (51) and a clevis (52) whereby at least one linear moving element (31) and rotating element (36) can be assembled by interposing said distance



pieces to form a desired composition in such a way that upon the mounting of the components the corresponding bore pairs ($A\text{-}A_1$; $B\text{-}B_2$; $C\text{-}C_2$; $D\text{-}D_1$; $E\text{-}E_2$; F-G; $D\text{-}B_2$; $G\text{-}B_2$) are joined together.

4,331,385

ELECTROCHROMIC DISPLAY DEVICE

Shigeo Kondo, Hirakata, and Nobuyuki Yoshiike, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 10, 1980, Ser. No. 139,122

Claims priority, application Japan, Apr. 17, 1979, 54-47590; Apr. 17, 1979, 54-47591; Apr. 17, 1979, 54-47598

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 5 Claims

1. An electrochromic display device (ECD) in an enclosed container, comprising: a display electrode, having an electrochromic substance; a counter electrode provided opposite said display electrode; and an electrolyte contacting with said display electrode and said counter electrode, characterized by the fact that said counter electrode comprises a collector and active material electrically contacting said collector, said collector being of a metal having valve effect and said active material being of a substance causing an oxidation reaction at a voltage lower than the voltage which could cause an oxidation reaction on the collector.

4,331,386

ELECTROCHROMIC DISPLAY CELL

Yasuo Minami, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1980, Ser. No. 143,016

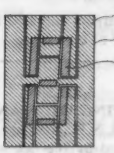
Claims priority, application Japan, Apr. 28, 1979, 54-58630[U]

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 4 Claims

1. An electrochromic display cell comprising a front glass substrate, a rear substrate, transparent electrodes formed on the surface of said front glass substrate, electrochromic layers formed on said transparent electrodes, a background creating means disposed between said front glass substrate and said rear substrate in a liquid electrolyte, an insulator layer formed on said front glass substrate in those areas not occupied by said

electrochromic layers so as to protect said transparent electrodes from the electrolyte, said transparent electrodes comprising a transparent conductive film formed on substantially



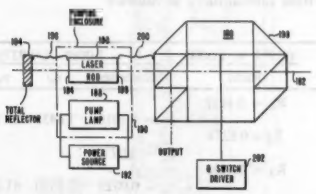
the entire display surface of said front glass substrate, said transparent film being interrupted by at least one thin gap formed therein which serves to electrically separate said transparent electrodes.

4,331,387

ELECTRO-OPTICAL MODULATOR FOR RANDOMLY POLARIZED LIGHT

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1980, Ser. No. 166,266
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—384 **19 Claims**



1. Electro-optical apparatus operative electronically to modulate a randomly polarized beam of light projected along an optical axis from a source of coherent light, said apparatus comprising:

an electro-optical cell operative in an energized state to modulate the polarization of a light beam passing along a predetermined axis thereof; and

a plurality of optical elements configured for polarizing said randomly polarized light beam, incident thereupon along said optical axis, into first and second light beam components having first and second planes of polarization, respectively, and for guiding said first and second components through said electro-optical cell colinearly along the predetermined axis thereof,

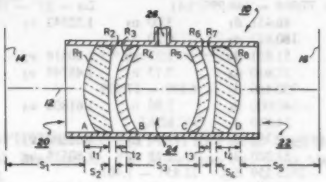
said plurality of optical elements further configured for combining first predetermined amounts of said first and second light beam components which have passed through said electro-optical cell to reform and exit a first predetermined amount of the randomly polarized light beam along a first axis therefrom, and for combining second predetermined amounts of said first and second light beam components which have passed through said electro-optical cell to reform and exit a second predetermined amount of the randomly polarized light beam along a second axis therefrom.

4,331,388

GAS ZOOM LENS

George L. McCrobie, Ontario, Calif.; James D. Rees, Pittsford, N.Y., and Roscoe J. Donnel, Glendale, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1980, Ser. No. 124,182
Int. Cl.³ G02B *1/06, 3/12*
U.S. Cl. 350—419 **4 Claims**



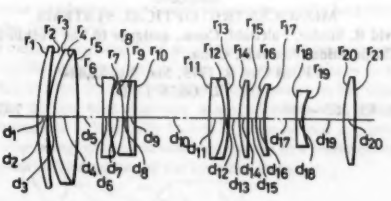
1. A gas zoom lens system consisting essentially of a first lens group and a second lens group, each group consisting of two elements, the first lens group consisting, from the front to the rear, a first positive meniscus element convex to the front and a second negative meniscus element convex to the front, said second group consisting from the front to the rear, a first negative meniscus element concave to the front and a second positive meniscus element concave to the front, said second element of said first group and said first element of said second group defining, between their opposed surfaces, a cavity filled with a gas having a characteristic index of refraction, said lens system further including means to vary the pressure of said gas thereby causing a corresponding variation in the focal length of the system.

4,331,389

COMPACT ZOOM LENS SYSTEM

Ryota Ogawa, Kawagoe, and Yasuo Takahashi, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 167,960
Claims priority, application Japan, Jul. 13, 1979, 54-89095
Int. Cl.³ G02B *15/14*
U.S. Cl. 350—427 **1 Claim**



1. A compact zoom lens system comprising, in order from the object side, a fixed first lens group, a movable second lens group having a variator effect, a third lens group having a focusing compensation effect and a fixed fourth lens group, said first lens group comprising, in order from the object side, a positive meniscus lens having a positive refractive power on the object side and a cemented lens comprising a negative meniscus lens having a negative refractive power on the image side and a positive lens having a positive refractive power on the object side; said second lens group comprising, in order from the object side, a negative lens having a strong negative refractive power on the image side and a cemented lens comprising a biconcave lens and a positive lens; said third lens group comprising, in order from the object side, a cemented lens comprising a biconcave lens and a negative meniscus lens; and said fourth lens group comprising, in order from the object

side, a positive lens having a strong positive refractive power on the object side, a positive meniscus lens having a strong positive refractive power on the object side, a negative lens having a strong refractive power on the image side and a positive lens having a strong positive refractive power on the object side, said lens system satisfying the following conditions:

	f = 77.064 ~ 144.997/1:41			2ω = 32° ~ 16.5°		
r_1	86.431	d_1	3.00 n_1	1.52542	ν_1	64.5
r_2	180.812	d_2	0.20			
r_3	51.821	d_3	1.37 n_2	1.80518	ν_2	25.4
r_4	37.630	d_4	7.15 n_3	1.48749	ν_3	70.1
r_5	−750.150	d_5	8.109 ~ 27.579			
r_6	−640.000	d_6	2.00 n_4	1.61800	ν_4	63.4
r_7	34.040	d_7	4.26			
r_8	−40.350	d_8	1.50 n_5	1.61800	ν_5	63.4
r_9	51.200	d_9	2.75 n_6	1.80518	ν_6	25.4
r_{10}	−2335.559	d_{10}	22.851 ~ 1.401			
r_{11}	107.650	d_{11}	4.50 n_7	1.64250	ν_7	58.4
r_{12}	−33.299	d_{12}	1.50 n_8	1.80518	ν_8	25.4
r_{13}	−63.102	d_{13}	3.585 ~ 5.564			
r_{14}	44.962	d_{14}	2.79 n_9	1.50048	ν_9	65.9
r_{15}	−1774.426	d_{15}	2.54			
r_{16}	23.000	d_{16}	2.65 n_{10}	1.48749	ν_{10}	70.1
r_{17}	37.630	d_{17}	9.70			
r_{18}	180.000	d_{18}	2.31 n_{11}	1.80610	ν_{11}	40.9
r_{19}	21.730	d_{19}	12.55			
r_{20}	52.000	d_{20}	3.50 n_{12}	1.64850	ν_{12}	53.0
r_{21}	−299.940					

$f_W = 77.064$ $e_1' = 17.685$
$f_T = 144.997$ $e_2' = 30.461$
$f_1 = 91.467$
$f_2 = -32.005$

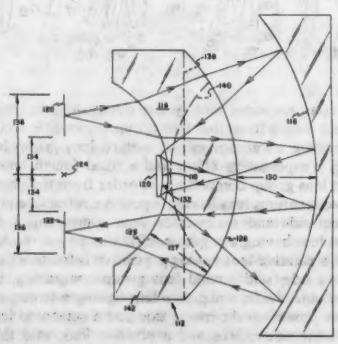
wherein f is the focal length, ω is half the viewing angle, $r_1, \ldots, r_{21}$ are the radii of curvature of the respective lens surface, $d_1, \ldots, d_{20}$ are the lens thicknesses or lens intervals, $n_1, \ldots, n_{12}$ are the refractive indices of the respective lenses at the d-line, $\nu_1, \ldots, \nu_{12}$ are the Abbe numbers of the lenses, f_W is the overall focal length at the wide angle end, f_T is the overall focal length at the telephoto end, f_1 is the focal length of the first lens group, f_2 is the focal length of the second lens groups, and e_1 is the distance between the principal points of the first and second lens groups.

4,331,390

MONOCENTRIC OPTICAL SYSTEMS

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 9, 1979, Ser. No. 82,814
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—444 **7 Claims**



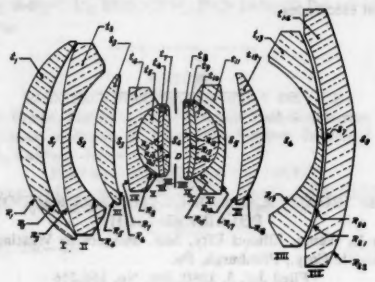
1. An optical system, comprising:
a concave mirror,
a convex mirror,
a transmission shell disposed between said mirrors so that a beam of light entering said optical system traverses said transmissive shell at least four times before leaving said optical system,
the surfaces of said mirrors and said transmissive shell having the same center of curvature.

4,331,391

LENS SYSTEM HAVING WIDE ANGLE OBJECTIVES

James G. Baker, Bedford, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 16, 1980, Ser. No. 150,522
Int. Cl.³ G02B *9/64, 13/18*
U.S. Cl. 350—463 **2 Claims**



1. A lens system having wide angle objectives having numerical data substantially as follows:

	(C.F.I. = 1.0000 E.F.L. = 1.0000 f/4.937)				
Element	Radii	Thicknesses	n_d	γ_d	Type
	R_1 = 0.4832				
I		t_1 = 0.1016	1.6433	47.76	643478
	R_2 = 0.6274				
		S_1 = 0.0773			
	R_3 = 1.4230				
II		t_2 = 0.0323	1.7550	53.28	755533
	R_4 = 0.3337				
		S_2 = 0.1054			
	R_5 = 0.4398				
III		t_3 = 0.0836	1.8807	41.06	881411
	R_6 = 1.2063				
		S_3 = 0.0523			
	R_7 = 2.0510				
IV		t_4 = 0.0378	1.6129	36.95	613370
	R_8 = 0.1739				
V		t_5 = 0.0884	1.5567	58.54	557585
	R_9 = 1.0724				
VI		t_6 = 0.0189	1.7755	37.90	776379
	R_{10} = 3.1058				
VII		t_7 = 0.0243	1.7847	26.10	785261
	R_{11} = Ashp.				
		S_4 = 0.0621			
	R_{12} = Ashp.				
VIII		t_8 = 0.0243	1.7847	26.10	785261
	R_{13} = −3.1058				
IV		t_9 = 0.0189	1.8807	41.06	881411
	R_{14} = −1.0724				
X		t_{10} = 0.0938	1.5567	58.54	557585
	R_{15} = −0.1739				
XI		t_{11} = 0.0323	1.6129	36.95	613370
	R_{16} = −2.0510				
		S_5 = 0.0709			
	R_{17} = −1.9043				
XII		t_{12} = 0.0852	1.8807	41.06	881411
	R_{18} = −0.4931				
		S_6 = 0.2229			
	R_{19} = −0.3584				

-continued

	(C.F.I. = 1.0000	E.F.L. = 1.0000	f/4.937)		
Element	Radii	Thicknesses	n_d	ν_d	Type
XIII		$t_{13} = 0.0323$	1.7885	50.45	789505
	$R_{20} = -1.1833$				
		$S_7 = 0.0018$			
	$R_{21} = -1.1792$				
XIV		$t_{14} = 0.1260$	1.6433	47.76	643478
	$R_{22} = -1.2623$				
		$S_8 = 0.3225$			

wherein the stop lies between R_{11} and R_{12} and has a clear aperture of 0.1852 at a distance along the axis of 0.0204 from R_{11}, and surfaces 11 and 12 above are both aspheric, have coefficients taken from the equation below, and have the following shapes for a 94-degree full field:

$C_{11} = 0.054683$ $\beta_{11} = 0.32272$ $\gamma_{11} = -38.786$
$\delta_{11} = 638.12$ $\epsilon_{11} = -10643$
$C_{12} = 0.183844$ $\beta_{12} = 1.39282$ $\gamma_{12} = 36.356$
$\delta_{12} = -720.12$ $\epsilon_{12} = 15382$

$$\xi_i = \frac{C_i \eta_i^2}{1 + \sqrt{1 - C_i \eta_i^2}} + \beta_i \eta_i^6 + \gamma_i \eta_i^6 + \delta_i \eta_i^8 + \epsilon_i \eta_i^{10}$$

where C_i is the curvature of the ith surface, β_i, γ_i, δ_i, and ϵ_i(beta$_i$, gamma$_i$, delta$_i$ and epsilon$_i$) are the coefficients of the aspheric polynomial terms, and ξ_i(xi$_i$) and η_i(eta$_i$) are the sagitta and zone height respectively.

4,331,392

OPHTHALMOSCOPIC SLIT LAMP

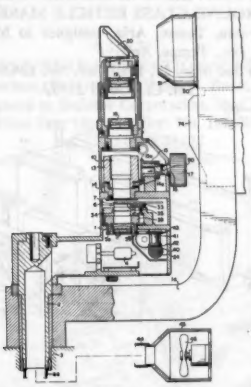
Masaru Sato, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1978, Ser. No. 934,205

Claims priority, application Japan, Aug. 16, 1977, 52-97972; Nov. 14, 1977, 52-152572[U]; Jun. 16, 1978, 53-72959

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—14 **8 Claims**



1. Ophthalmoscopic slit lamp comprising a slit illuminating section including means for illuminating a patient's eye in a pattern of a slit, and a binocular microscope section including support arm means, means for mounting the lower end of said support arm means for swingable movement about a vertical axis, lens tube means mounted on said support arm means at the upper end thereof, and a binocular optical system having objective lens means at one end of said lens tube means and a pair of optical axes in said lens tube means leading to binocular viewing eyepieces at the other end of said lens tube, said binocular optical system including, a pair of variable magnification optical means having parallelly extending optical axes and a pair of image inverting optical means disposed respectively along said optical axes of the variable magnification optical means, prism means in said lens tube near said other end for reflecting said pair of optical axes into said eyepieces, said optical system including means in said lens tube between said objective lens and said prism means for reflecting downwardly part of the light along the optical axes, said lens tube means having aperture means at a lower portion thereof for passing therethrough part of the light reflected by the reflecting means, camera mount means on said support arm means between said mounting means and said lens tube means, photographing camera means adapted to be mounted on said camera mount means with a photographing film held in a vertical plane through adapter means which includes second reflecting means for directing light from the aperture means to the camera means.

4,331,393

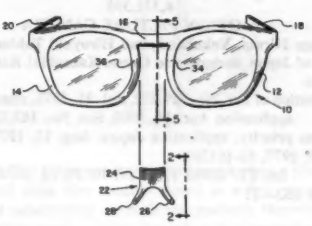
OPHTHALMIC FITTING SET AND METHOD

James B. Bradley, Jr., 110 Monteleon Dr., West Monroe, La. 71291

Continuation of Ser. No. 525,842, Nov. 21, 1974, Pat. No. 4,045,137. This application May 31, 1977, Ser. No. 802,072

Int. Cl.³ G02C *1/00, 5/04, 5/12*

U.S. Cl. 351—88 **8 Claims**



1. An ophthalmic fitting set for use by an optometrist or the like comprising:

(a) an ophthalmic eyeglass frame having formed thereon a pair of lens mounts for receiving a detachable and rigidly lockable nosepiece;

(b) a plurality of first one piece, preformed, rigid, detachable and lockable nosepieces for positioning on said frame, each nosepiece being sized for a different shape and size nose and being constructed so as to be rigidly lockable on the frame; and

(c) means associated with said frame and said nosepieces for rigidly attaching one of said lockable nosepieces to said frame after trying a plurality of nosepieces on the user of the device, said attaching means allowing said lockable nosepiece to be rigidly locked in place on said lens mount after being pivoted on said lens mounts to a predetermined position during use of the eyeglass frame.

4,331,394

ANTITHEFT DEVICE FOR SPECTACLES EXHIBITED FOR SELLING PURPOSES

Edouard Girard, 64, rue de Miromesnil, 75008 Paris, France

Filed Mar. 16, 1978, Ser. No. 887,320

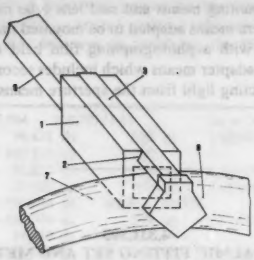
Claims priority, application France, Mar. 16, 1977, 77 07773

Int. Cl.³ G02C *1/00, 5/14*

U.S. Cl. 351—158 **5 Claims**

1. An antitheft device for spectacles being freely exhibited for selling purposes, the spectacles comprising a frame; a pair of bars and a hinge connecting each bar to the frame; and means for locking at least one of said hinges in its open position, thereby preventing folding thereof, said locking means

further comprising a sleeve which can be snugly fitted onto one of said pair of bars and is suitable for covering the hinge



connecting said one of said pair of bars to the frame while one end of said sleeve abuts against said spectacle frame.

4,331,395

MOTION PICTURE CAMERA

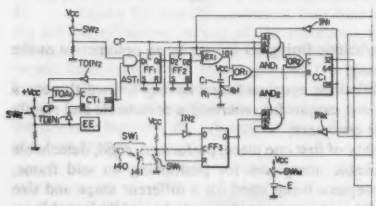
Noritsugu Hirata, Yokohama, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

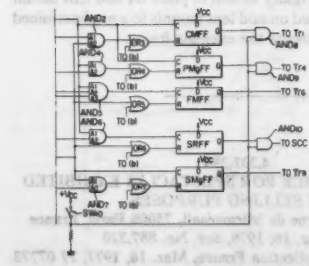
Continuation of Ser. No. 929,222, Jul. 31, 1978, abandoned. This application Apr. 24, 1980, Ser. No. 143,323

Claims priority, application Japan, Aug. 12, 1977, 52-97295; Aug. 23, 1977, 52-101261

Int. Cl.³ G03B *1/18, 17/46, 19/18, 31/02*

U.S. Cl. 352—27 **19 Claims**





1. A cine camera having a plurality of camera elements including at least film feeding means and sound recording means, and in which said camera elements are operatively controlled in different operational sequences at the start of the photographic operations and at termination of photographic operations, said cine camera comprising:

(a) manually operated trigger means;

(b) a start signal forming circuit to form a start signal by means of an operation of said trigger means;

(c) a stop signal forming circuit to form a stop signal by release operation of said trigger means;

(d) a counter circuit which starts a counting operation in response to said start signal and stop signal;

(e) counter setting means to set the counter circuit in a predetermined state in response to said start signal and stop signal;

(f) a start gate circuit including a plurality of gate means, each gate means being connected to a predetermined output terminal of said counter circuit and generating an output with a timing corresponding to a counted content in said counter circuit, and each camera element being operated in response to the output from predetermined gate means and in a sequence necessary for starting photographic operations sequentially by said start gate circuit at the start of photographic operations; and

(g) a stop gate circuit including a plurality of gate means, said each gate means being connected to a predetermined output terminal of said counter circuit and generating an output with a timing corresponding to the counted content of said counter circuit, and said each camera element being rendered inoperative in response to an output from predetermined gate means and in a sequence necessary for terminating photographic operations by said stop gate circuit at termination of the photographic operations,

said start gate circuit being rendered operative in response to said start signal, and said stop gate circuit being rendered operative in response to said stop signal.

4,331,396

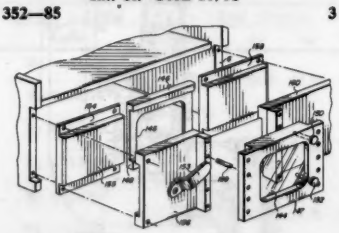
CAMERA PROVIDING APERTURE MASKING AND GROUND GLASS RETICLE MASKING

Bengt E. Nyman, Tempe, Ariz., assignor to Mangum-Sickles Industries, Inc., Tempe, Ariz.

Filed Mar. 27, 1980, Ser. No. 134,566

Int. Cl.³ G03B *21/32*

U.S. Cl. 352—85 **3 Claims**



1. A camera enabling a user to view an image to be photographed on a frame of undeveloped film superposed with an image previously recorded on a strip of developed film, the previously recorded image being representative of an image previously photographed on the frame of undeveloped film, said camera comprising in combination:

(a) a support housing;

(b) light focusing means including a lens and a movable mirror attached to said support housing for receiving light from a subject and for focusing the received light within a focal plane to provide the image to be photographed;

(c) a ground glass reticle attached to said support housing and positioned within the focal plane formed by said lens and said movable mirror of said light focusing means to permit viewing of the image provided thereby, said ground glass reticle having front and rear opposing planar surfaces wherein said rear planar surface is closer to said movable mirror than said front planar surface, said ground glass reticle allowing the image to be viewed from the front planar surface side thereof; and

(d) a reticle mask guide attached to said support housing opposite said rear planar surface of said ground glass reticle for receiving the strip of developed film while said ground glass reticle remains attached to said support housing and for guiding the received strip of developed film into adjacency with said rear planar surface of said ground glass reticle, said reticle mask guide having an opening for allowing light focused by said light focusing means to reach said ground glass reticle;

(e) first and second guide means attached to said support housing at opposite edges of said reticle mask guide for receiving the strip of developed film and guiding it to and from said reticle mask guide, each of said first and second guide means including a channel through which the strip of developed film is passed, the channel of at least one of said first and second guide means accessing the exterior of said camera for allowing insertion of the strip of developed film into said reticle mask guide from the exterior of said camera; and

(f) a reticle frame for attaching said ground glass reticle to said support housing, said reticle frame including at least one retractible pin slidingly secured to said reticle frame for engaging a hole within the strip of developed film for registering the strip of developed film relative to said ground glass reticle.

4,331,397

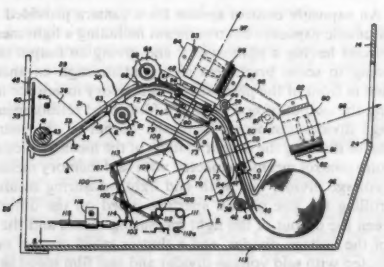
FRONT/REAR PROJECTION SYSTEM

Charles B. Jewison, Batavia, and Brian E. Buck, Bartlett, both of Ill., assignors to Dukane Corporation, St. Charles, Ill.

Filed Sep. 11, 1980, Ser. No. 186,306

Int. Cl.³ G03B *21/22*

U.S. Cl. 353—71 **22 Claims**



1. Apparatus for projecting a film image alternatively onto a remote surface and a built-in screen, said apparatus comprising a directional light source providing a beam of light, first and second non-coaxial projection lenses, a film carrier disposed between said light source and said projection lenses and having first and second apertures therethrough respectively optically aligned with said first and second projection lenses and defining a path for an associated filmstrip past said first and second apertures, and control means cooperating with said light source for effecting movement of the beam of light between a first optical path through said first aperture and said first projection lens for projection onto the associated remote surface and a second optical path through said second aperture and said second projection lens for projection onto the associated built-in screen.

4,331,398

DEVICE FOR TRANSPORTING SLIDE FILM MOUNTS IN A SLIDE FILM PROJECTOR

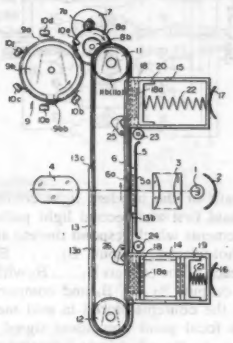
Tsutomu Kawarada, Ageo; Kimichika Yamada, Kawaguchi; Hiroshi Sango, Satte, and Katsushige Kiyokawa, Omiya, all of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,779

Claims priority, application Japan, Mar. 3, 1979, 54/26506; Apr. 9, 1979, 54/42830; Apr. 9, 1979, 54/42831; Apr. 9, 1979, 54/42833; Apr. 9, 1979, 54/46692[U]; Apr. 9, 1979, 54/46693[U]; May 4, 1979, 54/59904

Int. Cl.³ G03B *23/00*

U.S. Cl. 353—113 **21 Claims**



1. A slide film projector device for transporting a plurality of conventional slide film mounts stored in a first magazine in superposed relationship to each successively therefrom to a film projection aperture and, thereafter, to a second magazine so as to store them in superposed relationship to each other wherein the improvement comprises endless belt means arranged to move across the open end of each magazine and having a stepped shoulder portion adapted to engage with the side edge of a mount for transporting the same by the movement of said belt means, driving roller means engaging with said endless belt means for driving the same, signal generating means for generating electric signals in coupled relationship to the movement of said driving roller means, and an electric logic control circuit receiving said signals for controlling the operation of said driving roller means in response to said signals, thereby permitting the slide film mounts to be successively fed from said first magazine to said film projection aperture and, thereafter, from said aperture to said second magazine, wherein the height of said stepped shoulder portion is smaller that the smallest thickness of said mounts so that only one mount at a time can be positively engaged by said shoulder portion, and wherein said projection aperture comprises a pressure plate and a projection gate between which said mount is sandwiched and which assure accurate positioning of said mount relative to a projection lens system; said pressure slate having a length sufficient to extend between said magazines to permit said slide mounts to be transmitted at an exact position with said mounts being engaged between said belt means and said pressure plate.

4,331,399

FOCAL POINT COINCIDENCE SENSING DEVICE

Kiyoshi Kitai, and Takeo Saito, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 33,507

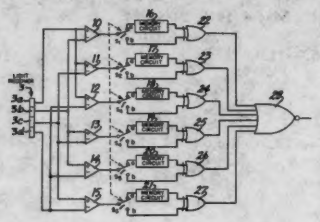
Claims priority, application Japan, Apr. 26, 1978, 53/50374

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—25 **5 Claims**

1. A focal point coincidence sensing device comprising: a light-receiving device having a plurality of light-receiving

elements for receiving incident lights coming from two different light paths; means for blocking a first one of the light paths so that the incident light coming from the second light path is received by said light-receiving elements which respond thereto and produce corresponding photoelectric outputs $A_1, \ldots A_n$; means for comparing each of the outputs $A_1, \ldots A_n$ with each of the other ones of the outputs $A_1 \ldots A_n$ and storing the compared values in a memory circuit; means for selectively effecting the application of the incident light coming from the



first light path or the incident light coming simultaneously from both said first and second light paths onto said light-receiving elements which respond thereto and produce corresponding photoelectric outputs $B_1, \ldots B_n$; and means for comparing each of the outputs $B_1, \ldots B_n$ with each of the other ones of the outputs $B_1 \ldots B_n$ and comparing the compared values with the contents stored in said memory circuit and producing a focal point coincident signal when the values corresponding to the same light-receiving elements coincide with each other.

4,331,400

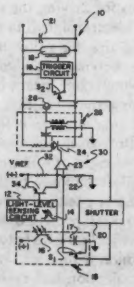
ELECTRONIC STROBE FLASH APPARATUS FOR AUTOMATIC FILL-IN AND FULL-FLASH

Scott A. Brownstein, and Carl N. Schauffele, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,146

Int. Cl.³ G03B 7/16

U.S. Cl. 354—33 **5 Claims**



1. For use in association with a camera having an exposure operation that is controlled in accordance with a desired amount of ambient exposure light reflecting from a photographic subject, an electronic strobe flash apparatus having a flashtube for emitting flash light to provide supplemental illumination for illuminating during an exposure operation a subject that is within the effective flash range of the camera, a light-responsive circuit arranged for measuring flash light and for producing a flash terminating signal upon measuring a first select amount of flash light that has reflected from the subject, and means responsive to the flash terminating signal for terminating light emission by said flashtube, said flash apparatus comprising:

(a) a light-level sensing circuit arranged for sensing an average ambient light intensity of a scene independently of subject range and for providing a discrete output indicative of whether ambient light intensity is above or below a predetermined level; and

(b) control means, coupling said sensing circuit and said light-responsive circuit, responsive to the output of said sensing circuit for causing said light-responsive circuit to reduce the first select amount of flash light needed to be measured to produce the flash terminating signal to a second select amount of flash light when the average ambient light intensity is above the predetermined level, to provide a unique fixed ratio between the amounts of flash and ambient exposure light reflected from a subject within the effective flash range for each exposure operation when average ambient light intensity is above the predetermined level, and to provide the first select amount of flash light reflected from such subject for each exposure operation when average ambient light intensity is below the predetermined level.

4,331,401

EXPOSURE CONTROL SYSTEM FOR A PHOTOGRAPHIC CAMERA

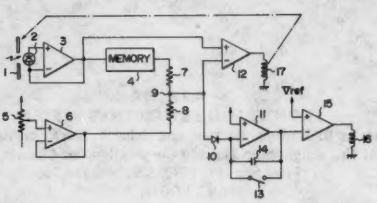
Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Continuation-in-part of Ser. No. 33,301, Apr. 25, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 239,030

Claims priority, application Japan, Apr. 27, 1978, 53-50427

Int. Cl.³ G03B 7/087

U.S. Cl. 354—37 **3 Claims**



1. An exposure control system for a camera provided with an automatic exposure control means including a light measuring circuit having a photosensor and giving an output corresponding to scene brightness measured through an aperture located in front of the photosensor, a memory means for memorizing the output of said output, a film speed setting means, a voltage divider connected with the output of the memory means for dividing the output voltage of the memory means, an aperture control means connected with said memory means via said voltage divider and with said light measuring means for controlling the size of said aperture based on the difference between the output of the light measuring means and the output of the voltage divider, and a shutter speed control means connected with said voltage divider and said film speed setting means for controlling exposure time based on the difference between the output of the film speed setting means and the output of the voltage divider.

4,331,402

SINGLE-LENS REFLEX CAMERA

Takahiro Nihei, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 206,891

Claims priority, application Japan, Nov. 29, 1979, 54/164183[U]

Int. Cl.³ G03B 7/00, 19/12

U.S. Cl. 354—59 **15 Claims**

1. In a single-lens reflex camera comprising:

a support plate:

a first mirror having a light transmitting section at a part

thereof and pivotally mounted on said support plate to swing between a first position where said first mirror leads light transmitted through a camera lens to a finder section and a second position where said first mirror allows said light to reach a shutter screen;

a second mirror pivotally mounted on said first mirror to swing between a first position where said second mirror leads light transmitting through said light transmitting section in a predetermined direction and a second position where said second mirror blocks up said light transmitting section; and

a mirror driving mechanism for driving said first and second mirrors, said mirror driving mechanism including driving means for swinging said first mirror between said first and second positions,

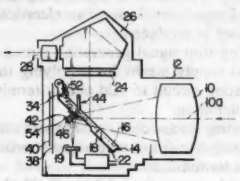
the improvement wherein:

said camera body has a chamber having at least one side wall, and said support plate comprises one side wall of said chamber, said chamber containing said first mirror therein; and said mirror driving mechanism further includes:

a cam surface formed in said support plate; and

an engaging member on said second mirror and capable of engaging said cam surface,

said cam surface causing said engaging member to swing said second mirror from said first position to said second position when said first mirror is swung from said first position to said second position by said driving means, and to cause said engaging member to swing said second mirror from said second position to said first position



when said first mirror is swung from said second position to said first position by said driving means.

4. A single-lens reflex camera according to claim 3, further comprising another support plate disposed inside the camera body and comprising another side wall of said chamber, said first mirror being swingably supported at both ends thereof by said two support plates.

5. A single-lens reflex camera according to claim 4, wherein said camera includes a lens and a finder section, and wherein said first mirror includes:

a mirror section comprising a light transmitting portion to transmit light in the vicinity of the optical axis out of light transmitted through said camera lens when said first mirror is in said first position, and a reflecting portion to reflect on the finder section other light than the light in the vicinity of the optical axis; and

a frame supporting said mirror section, said frame having two support plates facing each other and being pivotally mounted on said two support plates to swing around a pair of first shaft sections on said support plates, respectively, and the extended section of said engaging member extending integrally from said one side plate; and wherein said second mirror includes:

a mirror section to reflect light transmitting through said light transmitting portion of said first mirror when said second mirror is in said first position, and a support member supporting said mirror section of said second mirror, said support member having two ends and being pivotally mounted at both ends thereof on said two support plates to swing around a pair of second shaft sections.

6. A single-lens reflex camera according to claim 5, wherein said engaging member includes an extended section extending continuously from one support plate side end of the support member of said second mirror; and an engaging pin attached to the extended end of said extended section of said engaging member and being capable of engaging said cam surface.

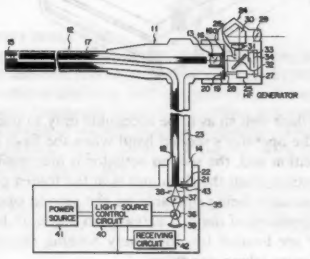
7. A single-lens reflex camera according to claim 6, further comprising a light sensor disposed in the chamber to receive the light transmitted through said light transmitting portion of said first mirror and reflected by said second mirror when said first mirror is in said first position.

4,331,403

PHOTOGRAPHING APPARATUS FOR ENDOSCOPE

Kunio Ohno, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1980, Ser. No. 110,628
Claims priority, application Japan, Jan. 11, 1979, 54-1987
Int. Cl.³ G03B *29/00*
U.S. Cl. 354—62 **4 Claims**



1. A photographing apparatus for an endoscope comprising an endoscope including an eyepiece section and a connector section, a camera mounted on said eyepiece section of said endoscope, a light source unit connected to said connector section of said endoscope and including a light source, a first electrostatic coupling means provided between said eyepiece section and said camera, and comprising a first dielectric member provided on said eyepiece section, a first electrode plate facing said first dielectric member and a second electrode plate provided on said camera and facing said first dielectric member, a second electrostatic coupling means provided between said connector section of said endoscope and said light source unit, a second dielectric member provided on said connector section, a third electrode plate facing said dielectric member and a fourth electrode plate provided on said light source unit and facing said second dielectric member, a high frequency generator provided in said camera and connected to said second electrode plate, said high frequency generator producing a high frequency signal, at least one connecting member connecting together said first and second electrostatic coupling means, a high frequency receiving circuit provided in said light source unit and connected to said second electrostatic coupling means, and means for controlling the light emission of said light source in response to the output of said receiving circuit.

4,331,404

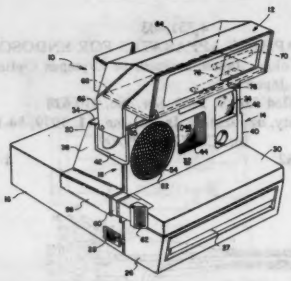
HAND HELD CAMERA HAVING PROTECTABLE AND BALANCED SWITCHING ARRANGEMENT

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1980, Ser. No. 194,571
Int. Cl.³ G03B *15/03, 17/04*
U.S. Cl. 354—126 **6 Claims**

1. In a hand held camera having a camera body; a foldable flash unit mounted on the camera body for pivotal movement with respect to the camera body between an erect, operative position and a folded, inoperative position; a first actuator

manually connected to the camera body and being operable for effecting a photographic cycle; the first actuator being positioned so that one hand of the camera operator may be used to actuate it while simultaneously supporting the camera; and a second actuator manually operable for affecting the photographic cycle when said second actuator is operative generally contemporaneously with actuation of said first actuator; the improvement wherein the second actuator is positioned on the



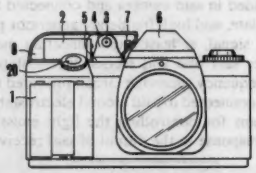
foldable flash unit so as to be accessible only to manual operation by the operator's second hand when the flash unit is in its erect position and, the second actuator is inaccessible to manual operation when the flash unit is in the folded position, the second actuator being operable by the second operator hand during operation of the first actuator so that both hands of the operator are located for effectively holding the camera in a stable picture taking condition.

4,331,405

CAMERA WITH SPEED LIGHT DEVICE

Hiroshi Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,163
Claims priority, application Japan, May 20, 1980, 55-66952
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—126 **4 Claims**



1. A camera including a camera body comprising:

a speed light device arranged on the upper surface of said camera body so as to be rotated, said speed light device having a light emitting plane and being loaded in a state in which said light emitting plane is in contact with the upper surface of the camera body when said speed light device is not used; and

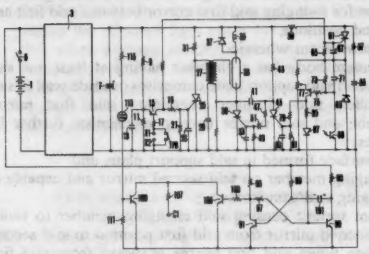
urging means for urging said speed light device to an upright position on said camera body with said light emitting plane directed along the photographing direction of said camera when said speed light device is used.

4,331,406

INDICATING DEVICE FOR COMPUTER TYPE ELECTRONIC FLASH UNIT

Masayoshi Kiuchi, Yokohama; Masaharu Kawamura, Kawasaki; Masanori Yamada, Yokosuka, and Hiroyasu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,308
Claims priority, application Japan, May 15, 1979, 54-75201
Int. Cl.³ G03B *15/05, 17/18*
U.S. Cl. 354—128 **35 Claims**



1. A flash system including a computer type electronic flash unit and a camera, comprising:

a computer type electronic flash unit including:

(a) an output terminal at which a signal representing the fully charged condition of an electrical energy storage capacitor is produced;

(b) a firing stop signal generating circuit; and

(c) signal supply means for supplying the output of said generating circuit to said output terminal;

a camera including:

(a) indicating means connected to said output terminal for indicating the firing stop signal transmitted from said output terminal; and

(b) override means for inhibiting said charge completion signal from being transmitted to said indicating means in response to a releasing operation of said camera.

34. A flash system having a computer type electronic flash unit and a camera, comprising:

a computer type electronic flash unit including:

(a) first signal generating means for generating a first signal when a predetermined quantity of light has been emitted from the flash unit; and

a camera including:

(a) indicating means for indicating the first signal; and

(b) means connected to said indicating means for effecting an indication in the indicating means in connection with the termination of the exposure in said camera.

4,331,407

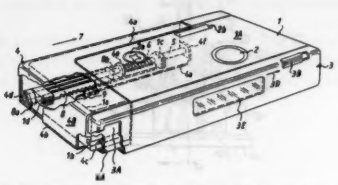
MINIATURE STILL CAMERA WITH EXPANSIBLE HOUSING

Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching; Rolf Schröder, Baldham, and Dieter Maas, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 493,462, Jul. 31, 1974, Pat. No. 3,987,469. This application May 20, 1976, Ser. No. 688,292
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1973, 2340786
The portion of the term of this patent subsequent to Oct. 19, 1993, has been disclaimed.
Int. Cl.³ G03B *17/04*
U.S. Cl. 354—187 **4 Claims**

1. In a photographic apparatus, particularly in a still camera, a combination comprising a housing including a first section having a relatively long first side and a relatively short second

side adjacent to said first side, and a substantially L-shaped second section having a first leg adjacent to said first side and a second leg substantially parallel to said second side of said first section, said second section being reciprocable relative to said first section in parallelism with said first side of said first section between spaced apart first and second positions in which one of said sections respectively conceals and exposes part of the other of said sections; means for guiding said second section during movement relative to said first section, including first guide means adjacent to and parallel to sid first side of



said first section and second guide means remote from said first side of said first section and parallel to said first guide means, each of said guide means comprising a first portion in said first section and a second portion disposed in said second section and slidable along said first portion, one of said portions of one of said guide means having an elongated rod parallel to said first leg and the other one of said portions of said one guide means comprising at least one eyelet through which said rod extends; film transporting means in said first section; and means for actuating said film transporting means, comprising a member secured to and movable with said second section.

4,331,408

PHOTOGRAPHIC BELLOWS UNIT

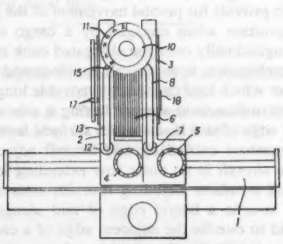
Siegfried Zeibig, Dresden, German Democratic Rep., assignor to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, German Democratic Rep.

Filed Aug. 15, 1979, Ser. No. 66,746

Claims priority, application German Democratic Rep., Aug. 30, 1978, 207552

Int. Cl.³ G03B *17/04*

U.S. Cl. 354—191 **2 Claims**



1. In a photographic bellows unit having a pair of standards which are adjustable relative to each other, the provision of a device indicating the distance between the standards comprising:

(a) two scissors-shaped levers arranged between the standards which are hingedly interconnected at one lever end and whose other end is rotatably hinged to respectively one of the standards,

(b) an index arranged on one pivotable lever, and

(c) a measuring scale is arranged on the other pivotable lever.

4,331,409

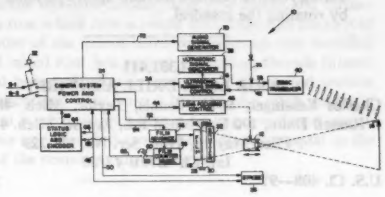
PHOTOGRAPHIC APPARATUS WITH DUAL FUNCTION SONIC TRANSDUCER

William J. Cianci, Jr., North Andover, and Donato F. Pizzuti, Lynnfield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1981, Ser. No. 249,121

Int. Cl.³ G03B *13/20, 17/36, 17/18*

U.S. Cl. 354—195 **11 Claims**



1. A camera comprising:

a ranging system for providing a ranging signal indicative of subject distance, said ranging systems being formed in part by a sonic transducer that is electrically driven in the ultrasonic frequency range for emitting non-audible energy towards a subject and for thereafter detecting an echo returned therefrom in conjunction with providing said ranging signal; and

an audio system formed in part by said same sonic transducer and including means for electrically driving said transducer in an audio frequency range for providing audible information to the camera operator.

4,331,410

TOOL FOR CUTTING LIPS OF STAKED BEARINGS AND BUSHINGS WITH RING-GROOVED FACES FOR RETENTION

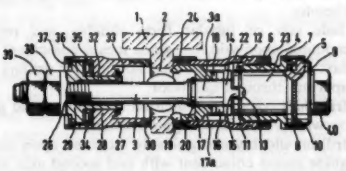
Siegfried Schnabel, Bremen-Lesum, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,766

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854121

Int. Cl.³ B23B *41/12, 47/18*

U.S. Cl. 408—94 **5 Claims**



1. A tool for cutting away the lips of sleeves staked into bores of parts;

a mandrel having a threaded tip and a means on its other end for applying torque;

support means threaded onto said threaded tip;

a first stop element rotatably mounted onto the support means as threaded onto the tip of the mandrel and held on the support means against axial displacement for providing engagement with a part from which a staked sleeve is to be removed;

a milling cutter, having a hollow portion, receiving the mandrel and being held thereon against axial displacement;

a follower means for coupling the cutter to the mandrel so

that the cutter turns with the mandrel, and torque is transmitted from the mandrel to the cutter by the follower means;

a sleeve on the mandrel, held against axial displacement;

a second stop means threaded onto the sleeve and held thereon against axial displacement for engagement with the part from the side of cutting, opposite a side of engagement by the first stop means for limiting the total depth of cutting; and

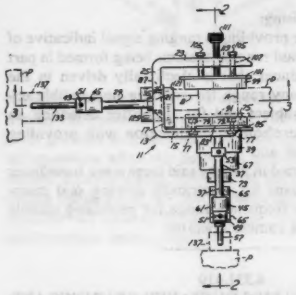
a thrust-bearing means interposed between the mandrel during relative rotation thereof, upon operating the cutter by rotating the mandrel.

4,331,411

DOOR LOCK DRILL ASSEMBLY

Charles Kessinger, 6345 Glennis, Taylor, Mich. 48180, and Russell Dolin, 190 Soughfield Rd., Ecorse, Mich. 48229

Filed May 19, 1980, Ser. No. 151,229
Int. Cl.³ B73B *47/28*
U.S. Cl. 408—97 **11 Claims**



1. A door lock drill assembly comprising an upright housing of U-shape in plan, including an apertured side wall and end wall positionable upon the upright edge of a door for drilling a cylindrical first aperture through the door on a first axis and for drilling a second aperture into the door edge on a second axis co-planer to and at right angles to said first axis;

means for securing the housing upon the door engaging opposite sides thereof and the adjacent door edge;

first and second guide means secured upon said side wall and end wall respectively, extending outwardly at right angles thereto;

a hole saw of tubular form slidably and reciprocally mounted upon said first guide means coincident with said first axis movable into said housing for drilling said first aperture through said door;

a drill shaft coaxial and secured to said saw and projecting outwardly of said first guide means;

a drill bit slidably and guidably mounted upon said second guide means coincident with said second axis, alternately movable into said housing for drilling said second aperture into said door and communicating with said first aperture;

and a drill shaft coaxial and secured to said drill bit and projecting outwardly of said second guide means;

said drill shafts adapted to be selectively power driven and fed into said door upon said axes;

said first and second guide means including each a pair of vertically spaced parallel guide rods at their one ends rigidly secured to said side and end walls respectively;

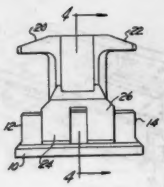
and a drill guide having apertured bosses at its ends and an apertured central hub, said bosses slidably mounted upon a pair of said guide rods, each drill shaft extending through said hubs respectively and secured thereto for guided reciprocal movements upon said first and second axes alternately.

4,331,412

RETRACTABLE PALLET SECURING DEVICE

Michael C. Graf, Memphis, Tenn., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed Nov. 23, 1979, Ser. No. 96,925
Int. Cl.³ B60P *7/08*; B61D *45/00*; B63B *25/22*
U.S. Cl. 410—69 **17 Claims**



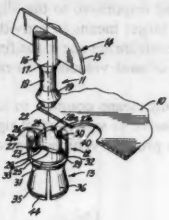
1. A restraint for use in cargo carrying aircraft having an elongated cargo carrying deck space over which cargo carrying units are slidable longitudinally thereof, said restraint comprising a base adapted to be fixed to the deck of said space, an elongated guide post pivoted at one end to said base, pivot means connecting said one end of said post to said base, said pivot means providing for pivotal movement of said post about a first axis transverse to the length of said elongated deck space and effective to prevent pivotal movement of said post about an axis parallel to the length of said space, said post having an upright operating position and a retracted substantially horizontal position in which said restraint is below the cargo supporting surface of said deck space, said post having at its other end a laterally extending arm extending transversely of the length of said elongated deck space adapted when said post is in upright position to overlie a lateral edge of a cargo carrying unit and to form a lateral guide during movement of the cargo carrying unit longitudinally of the elongated deck space, resilient means acting between said base and said guide post operable to retain the guide post in upright position, and also being yieldable to provide for pivotal movement of the guide post to retracted position when engaged by a cargo carrying unit moving longitudinally over the elongated deck space.

14. In combination, in an aircraft, an elongated load support surface over which load carriers are movable longitudinally of the support surface, said aircraft having a side wall defining one lateral edge of said load support surface, lateral guide and restraint members carried by said aircraft adjacent the side wall of the aircraft in an outer row extending longitudinally thereof, said members including restraint arms extending inwardly to overlie a lateral edge of said elongated support surface, and to overlie the adjacent edge of a cargo carrying unit moving longitudinally of said surface, a multiplicity of retractable guide and restraint devices mounted on the aircraft in a longitudinally extending row spaced laterally inwardly from said outer row and parallel thereto, each of the retractable guide and restraint devices comprising a base and an elongated guide post pivoted at its lower end to said base for pivotal movement about an axis perpendicular to said rows into a retracted position in which it is retracted entirely below the load support surface of the aircraft and resilient means acting between said base and said guide post operable to retain the guide post in upright position and also being yieldable to provide for pivotal movement of the guide post to retracted position.

4,331,413
QUARTER TURN PLUG FASTENER

Cuyler Hoen, Rennesselaer, N.Y., assignor to Simmons Fastener Corporation, Albany, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,815
Int. Cl.³ F16B *13/08*
U.S. Cl. 411—44 1 Claim



1. A fastener securing together a first and a second panel each having an opening therethrough, said fastener including:

a stud member having an imaginary central axis and a handle by which the stud member may be rotated about its axis to open or close said fastener, said handle having two sides projecting in opposite directions away from said axis and each side having a straight bottom camming edge,

a ramp means fixed to the side of said first panel away from said second panel and comprising the only ramp means of the fastener, said rap means comprising a ring having two diagonally opposed ramps on its upper end;

upon rotation of said stud member about its axis each of the said bottom camming edges cams upon one of the said opposed ramps to move said stud member in the direction of its axis to close said fastener;

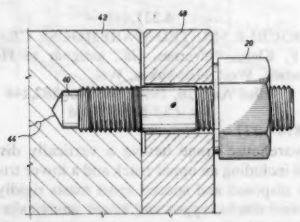
a plurality of at least three flexible and resilient finger members integral with said ramp means and arranged around said stud member and positioned within the hole of said second panel with each finger member having an internal slanted wall and an external wall to be wedged against said second panel;

on rotation of said stud member and its axial movement to close said fastener, said stud member contacting said finger means internal walls and camming them outwardly with respect to the axis of said stud member to thereby wedge said finger members against the internal wall of said second panel hole.

4,331,414
LEAKPROOF STUD BOLT INCORPORATING MODIFIED THREAD

Thomas Wheatley , Jr., 2002 Roanwood, Houston, Tex. 77090

Filed May 12, 1980, Ser. No. 149,048
Int. Cl.³ F16B *39/30*
U.S. Cl. 411—311 5 Claims

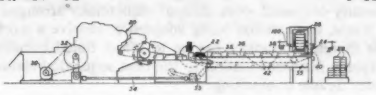


1. A modified stud bolt having an unthreaded central portion and a first thread formed one one end thereof adapted to be threaded into an internally tapped opening wherein the stud bolt has a second threaded portion extending from a second end thereof, said stud bolt further comprising an elongate bolt body of generally cylindrical construction wherein said first thread extends from the first end thereof, and said first thread comprises a plurality of thread turns with said thread turns being formed to a specified profile having a crown on each helical turn of thread and a root between adjacent helical turns of the thread wherein at least approximately one full turn of the thread has a modified crown wider than the profile of the remaining thread turns of said first thread which are in accordance with the standard defining said first thread and further including a root which root is raised with respect to the root of the remainder of the thread turns, and wherein said modified crown and raised root jam against the mating threads formed in a tapped hole and wherein said root at the raised portion thereof is increased to at least 0.25 times the pitch, and said root portion is adjacent to a thread having a widened crown and wherein said modified crown has a diameter equal to the diameter of the remaining thread turns.

4,331,415
AUTOMATIC BUNDLE FORMING APPARATUS

Glenroy G. Blatz, Kiel, and Burdette A. Petersen, Plymouth, both of Wis., assignors to H. G. Weber & Co., Inc., Kiel, Wis.

Filed Jun. 23, 1980, Ser. No. 162,133
Int. Cl.³ B65G *57/30*
U.S. Cl. 414—52 9 Claims



1. In an automatic high speed bundle forming apparatus arranged to assemble preformed and aligned stacks of generally flat material into vertically aligned bundles for packaging comprising:

a delivery conveyor having an advancing means associated with each stack to continuously move said stacks of material along a conveying surface in a uniform, spaced relationship relative to one another toward an accumulating area;

means to continuously advance said delivery conveyor to successively deliver individual stacks of material horizontally into said accumulating area with means to retract said advancing means from contact with a related stack, when said individual stack is suitably delivered into said accumulating area;

a vertical lifting mechanism positioned in said accumulating area and including:

a chain drive means being mounted for orbital travel with upward and downward extending chain runs;

an elevating finger means carried on said chain drive means; and

a cam means and cam follower means associated with said elevating finger means to horizontally extend said elevating finger means in a stack supporting position when traveling along said upward chain run and to retract said elevating finger means in a clearance position when traveling along said downward chain run;

a gathering frame positioned at said accumulating area and having a bundle supporting means associated therewith to support the said preformed stacks of material while a bundle is being formed; and

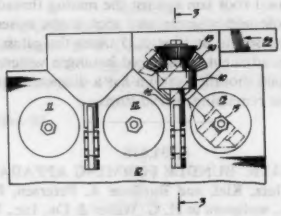
a synchronizing power transmission means being driven by said delivery conveyor and arranged to drive said chain drive means whereby said elevating finger means lifts each preformed and aligned stack of material from said conveying surface when delivered into said accumulating area being spaced apart from succeeding stacks and individually elevates each preformed stack into said gathering frame whereupon said elevating finger means is retracted

from said stack supporting position and the elevating stack of material is deposited on said bundle supporting means whereby elevated stacks of material are assembled into a bundle of a vertically aligned desired size.

4,331,416
ARTICLE TRANSFER DEVICE

Imre Berecz, El Toro, Calif., assignor to Bristol Industries, Brea, Calif.

Filed Oct. 1, 1979, Ser. No. 80,983
Int. Cl.³ B65G 47/90
U.S. Cl. 414—226 **6 Claims**



1. In a machine having a longitudinally extended frame and a plurality of spaced work stations sequentially arranged along said frame, each station being adapted to receive a workpiece blank therein, a transfer device to effect timed transfer of a workpiece from one station to the next sequential station, the transfer device comprising:

(a) a sub-frame fixedly attached to the machine;

(b) an elongated transfer arm having a longitudinal axis and constructed and adapted to receive in fixed relation thereto grasping means at one end to grasp a workpiece and rotation means at the other end to effect rotation about said longitudinal axis;

(c) a reaction element fixedly secured to said sub-frame and adapted to cooperate with said rotation means;

(d) mounting means for pivotally and rotatably connecting said transfer arm to said sub-frame to permit penduluum swinging of the arm in an arcuate path of travel and rotation about said longitudinal axis and to prevent motion along said longitudinal axis;

(e) driving means to effect cyclic pivotal oscillation of said transfer arm in said arcuate path of travel and concurrent rotation of said transfer arm about said longitudinal axis by the interaction of said rotation means and said fixed reaction element, whereby a workpiece held by grasping means at said one end is moved and rotated in an arcuate transfer path of travel from one work station to the next sequential station; and

(f) grasping means fixedly attached to said one end of said elongated transfer arm and having a pair of pivoted opposed jaws which are profiled and contoured to accept a workpiece and to open at right angles to said longitudinal axis when forced apart by a workpiece such that a workpiece enters and leaves said jaws in a direction perpendicular to said longitudinal axis without opening said jaws or adjusting the position thereof along said longitudinal axis.

4,331,417
VEHICLE ALIGNMENT AND METHOD

James T. Shearer, Jr., Ada, Mich., assignor to Rapitsan Division, Lear Siegler, Inc., Grand Rapids, Mich.

Filed Mar. 7, 1980, Ser. No. 128,261
Int. Cl.³ G01V 9/04
U.S. Cl. 414—273 **17 Claims**

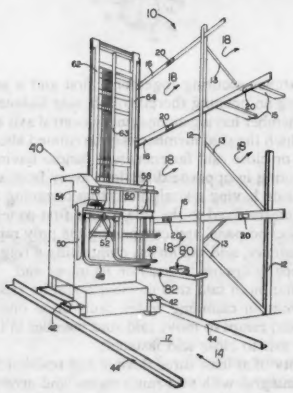
1. A system for controlling the alignment of an article transporting vehicle with respect to storage locations of an article storage system comprising:

a storage structure for receiving and storing articles, said structure including a framework or vertical and horizontal support members defining an array of storage locations;

target means positioned at a predetermined location with respect to each storage location;

an article transporting vehicle including drive means for moving said vehicle to any of the storage locations in said storage structure, said vehicle including target sensing means having three detectors positioned in a triangular pattern and responsive to the alignment of said detectors with said target means to provide predetermined control signals therefrom for use in the fine horizontal and vertical centering of said vehicle with respect to a storage location; and

control circuit means coupled to said target sensing means and responsive to said control signals from said detectors thereof to provide vehicle control signals applied to said



drive means for actuating said drive means to position said vehicle in horizontal and vertical alignment with a storage location for the transfer of articles between said vehicle and said storage location.

7. A method of aligning a materials handling vehicle with storage location for the transfer of articles between the vehicle and storage locations comprising the steps of:

positioning a target at a predetermined location with respect to each storage bin location;

positioning target sensing means having a triangular pattern of target detectors on a materials handling vehicle;

developing control signals in response to the aligned status of the detectors with respect to the target; and

moving the vehicle in response to the control signals such that the vehicle is aligned along mutually perpendicular axes with a storage location for the transfer of articles between the vehicle and the storage location.

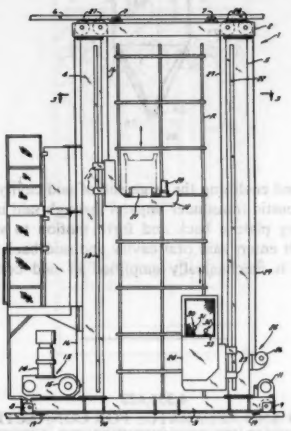
4,331,418
DOUBLE MASTED WAREHOUSE CRANE

Herbert F. Klebe, Norcross, Ga., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Aug. 28, 1980, Ser. No. 182,144
Int. Cl.³ B65G 1/06
U.S. Cl. 414—277 **3 Claims**

1. A warehouse crane having a vertically disposed main frame and including an upper truck and a lower truck, a pair of vertically disposed and spaced apart masts rigidly connected between said trucks, upper and lower guide rails for guiding said upper and lower trucks, respectively, of said main frame along a longitudinal path, a load carriage movably mounted on one of said masts for vertical positioning thereon, a shuttle mechanism carried by said load carriage and for supporting a load, said shuttle mechanism movable transversely of said

longitudinal path whereby said load can be transferred from said load carriage and into load storage stations arranged in horizontal rows and vertical columns adjacent one side of said longitudinal path, hoist means for said load carriage for vertically positioning the same relative to said load storage stations, a second carriage vertically positionable along the other of said masts, hoist means for said second carriage for vertically positioning the latter independently of the operation and vertical position of said load carriage, whereby an operator in said



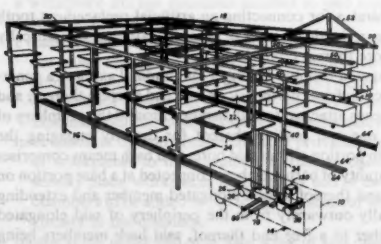
second carriage can vertically position himself adjacent said load carriage at any of the latter's vertical positions and completely and independently of movement of the load carriage, said load carriage is located between said masts but spaced from the other of said masts and said second carriage is located between said masts but spaced from one of said masts whereby said carriages can move independently of one another in the space between said masts and without physical interference from one another.

4,331,419

STORAGE SYSTEM FOR CARGO CONTAINER TRAILERS

Lynn F. Perrott, Portland, Oreg., assignor to Scott S. Corbett, Jr., Portland, Oreg.

Filed Apr. 21, 1980, Ser. No. 142,042
Int. Cl.³ B66F 9/14
U.S. Cl. 414—283 **8 Claims**



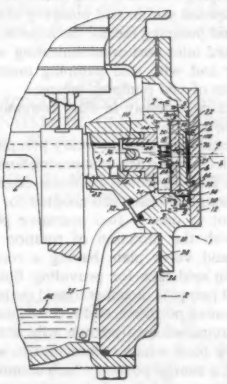
1. A storage system for cargo container trailers, comprising:
(a) a storage structure having a bottom floor and at least one pair of elevated, horizontally elongated floors spaced apart horizontally to provide a longitudinal passageway therebetween,
(b) a steerable, powered vehicle having front and rear pairs of wheels and maneuverable over the ground independently of and exteriorly of said storage structure,
(c) vertically elongated mast means, extending upwardly from the vehicle,
(d) elongated mast guide means on the storage structure above the elevated floors arranged to engage the upper end of the mast means for guiding movement of the mast means relative to the guide means, the guide means extending parallel to said passageway for movement of the mast means longitudinally through said passageway, and
(e) elevator means mounted on the vehicle for vertical movement relative thereto, the elevator means including trailer support means extending retractably to one lateral side of the vehicle and arranged to releasably support a trailer for transport to and from said elevated floors.

4,331,420

REVERSIBLE UNIDIRECTIONAL FLOW PUMP WITH FRICTIONALLY ENGAGED AXIAL VALVE PLATE

Othel L. Jones, Shelby County, Ohio, assignor to Copeland Corporation

Continuation of Ser. No. 945,237, Sep. 25, 1978, abandoned. This application May 15, 1980, Ser. No. 150,232
Int. Cl.³ F04C 15/02
U.S. Cl. 418—32 **20 Claims**

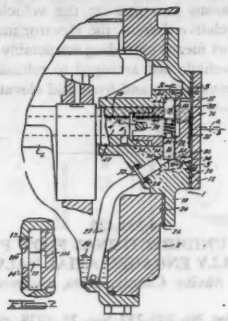


1. In a reversible, rotary fluid pump including a housing defining a pumping chamber, fluid outlet means, rotary pumping means disposed within said pumping chamber rotating about an axis, and a shaft for driving said pumping means; the improvement comprising:
a single fixed inlet port communicating directly with said pumping chamber and with said pumping means at the same point of said pumping chamber in all operable conditions of said pumping means;
a fluid inlet passageway in fluid communication with said inlet port; and
a movable valve plate disposed in frictional engagement with said pumping means, axially disposed from said pumping means, and being adapted for limited rotational movement to one of two operative positions in accordance with the direction of rotation of said pumping means, said valve plate having passageway means formed therein for directing fluid flow from said pumping chamber to said fluid outlet means in each of said operative positions.

4,331,421
REVERSIBLE UNIDIRECTIONAL FLOW PUMP WITH AXIAL FRICTIONALLY ENGAGED RECESSED VALVE PLATE

Othel L. Jones, 1260 N. Kuther Rd., and Lawrence W. Cheney, Box 63, R.R. #5, both of Sidney, Ohio 45365

Continuation of Ser. No. 44,345, May 31, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,859
Int. Cl.³ F04C *15/02*
U.S. Cl. 418—32 17 Claims



1. In a reversible, rotary fluid pump including a housing defining a pumping chamber, fluid inlet means communicating with said pumping chamber, fluid outlet means, rotary pumping means disposed within said pumping chamber, and a shaft for driving said pumping means; the improvement comprising:

a single fixed inlet port communicating with said pumping chamber and with said pumping means in all operable conditions of said pumping means;

a fluid inlet passageway in fluid communication with said inlet port; and

valving means between said rotary pumping means and said fluid outlet means solely comprising a movable valve plate having a face thereof in frictional engagement with said rotary pumping means and adapted for limited rotational movement to one of two operative positions in accordance with the direction of rotation of said pumping means, said valve plate having a recessed outlet port formed in said face for providing fluid communicating from said pumping chamber to said outlet means in both of said operative positions, said recessed outlet port comprising an arcuate-shaped portion adjacent the periphery of said valve plate which communicates with said pumping chamber, a central portion which communicates with said outlet means, and a radial portion communicating between said arcuated shaped portion and said central portion.

4,331,422
ACOUSTIC TOOTH CLEANER

Joseph S. Heyman, Gloucester, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 14, 1980, Ser. No. 178,193
Int. Cl.³ A61C *3/06*
U.S. Cl. 433—125 3 Claims

1. A device for treatment of tooth and gingival structures to provide daily personal hygenic care comprising:

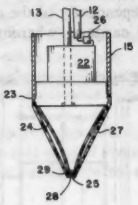
a reservoir of a liquid;

means for transmitting said liquid under pressure from said reservoir to an oral cavity;

said means for transmitting said liquid includes a cone shaped cavity with the liquid flowing into the large end of said cavity and out of a small hole at the small end of said cavity into said oral cavity whereby the liquid under pressure keeps said cone shaped cavity filled with said liquid;

an acoustic transducer supplied with a high frequency electrical signal;

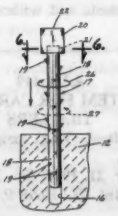
an impedance matching plate bonded to said acoustic transducer and enclosing the large end of said cavity whereby said acoustic transducer imparts through said impedance matching plate a back and forth motion to said liquid before it enters said oral cavity and said back and forth motion is mechanically amplified in said cone shaped cavity.



4,331,423
METHOD AND APPARATUS FOR CONNECTING AN ARTIFICIAL TOOTH PORTION TO A DENTIN PORTION

James F. M. Yanney, Jr., 9705 SW. Hall Blvd. #10, Tigard, Oreg. 97223

Filed Mar. 9, 1981, Ser. No. 242,059
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 9 Claims



1. Apparatus for connecting an artificial replacement tooth portion to a dentin portion of a tooth having a cylindrically shaped bore therein comprising:

an elongated member having a longitudinal axis and a generally cylindrical periphery on one end portion thereof; and

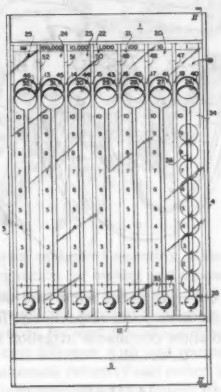
barb means attached to and disposed around the periphery of said one end portion thereof for directly engaging the dentin portion within said bore, said barb means comprises a plurality of barb members connected at a base portion on one end thereof to said elongated member and extending radially outwardly from the periphery of said elongated member to a free end thereof, said barb members being wider at the base portion thereof than at the free end thereof, the free end of each of said barb members being circumferentially spaced to one side of the respective base portion along said cylindrical periphery, whereby rotation of said elongated member in a direction such that the free end follows the respective base portion causes the barb means to conform to said bore.

4,331,424

MATH EDUCATIONAL APPARATUS

Jane L. Crane, 1541 Winding Waye La., Wheaton, Md. 20902

Filed Nov. 12, 1980, Ser. No. 206,278
Int. Cl.[3] G09B *19/02*
U.S. Cl. 434—208 20 Claims



1. Educational apparatus used as a visual aid in the teaching of mathematics, with respect to a base N number system having the digits 0–N, place values of N, N0, N00, etc., and regrouping between places, comprising:

a plurality of substantially identical separate workpieces;

a support base;

partitions mounted on said support base and rigidly interconnected to thereby form a plurality of substantially parallel, at least partially vertically extending, tubular chambers extending in a side-by-side array adjacent each other;

each chamber having a cross-sectional area transverse to its length larger than the corresponding cross-sectional area of each workpiece and smaller than the cross-sectional area of two adjacent workpieces so that the workpieces will only stack serially in each chamber, means at the lower end of each chamber to close said chamber, to prevent the escape of workpieces from the lower end of the chamber;

each chamber being of a length sufficient to serially stack at least N workpieces;

a workpiece storage container secured to said support base spaced from said columns;

a transfer means within each of said chambers movable from the lower end to the upper end of its respective chamber, being of a size sufficient to drive any workpieces within its chamber for movement therewith, and having an actuator extending outside of said chamber to be manually grasped;

inlet means at the top of each chamber providing free access of workpieces to the chamber, so that an operator may serially place workpieces in the upper end of each of said chambers to be added to the top of the stack of workpieces already in the chamber;

means at the upper end of at least some of said chambers for transporting one workpiece to a specific adjacent chamber; and

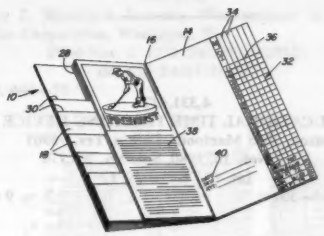
means for discharging the other workpieces through an exit aperture in the chamber to said storage container when said workpieces are moved upwardly in said chamber by movement of said transfer means from its lower position to its upper position.

4,331,425

GOLF SCORE CARD AND HOLE INFORMATION GUIDE

James W. Davis, Jr., P.O. Box 133, Montgomery, Ala. 36101

Filed Oct. 9, 1980, Ser. No. 195,631
Int. Cl.[3] A63B *57/00, 69/36*
U.S. Cl. 434—252 6 Claims



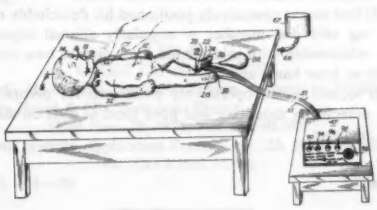
1. A golf score card and hole information guide comprising a booklet consisting of front and rear cover pages and a plurality of intermediate pages foldable along a vertical centerline and bound together, each of the intermediate pages including an enlarged depiction of a hole of a golf course with the pages and holes being arranged in numeral succession, the interior surface of the rear cover including a score recording area thereon, and the intermediate pages including cutouts in the upper right-hand corner so that when the intermediate pages overlie the inner surface of the rear cover, the score recording area with be revealed to enable a score to be recorded thereon.

4,331,426

CARDIOPULMONARY RESUSCITATION MANIKIN WITH ANTISEPTIC CLEANING SYSTEM

Kevin M. Sweeney, Woodstock, N.Y., assignor to Simulaids, Inc., Woodstock, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,291
Int. Cl.[3] G09B *23/28*
U.S. Cl. 434—265 8 Claims



1. A training manikin for teaching cardiopulmonary resuscitation, which comprises

(a) a hollow body in human form, with a chest having a sternum and two nostril orifices and a mouth orifice, and an air passage extending from the nostril and mouth orifice, whereby the air passage is readily flushable through the introduction of a flushing fluid into the air passage through any one of the orifices,

(b) a pressure indicating system including a pressure sensing means located in the thoracic cavity substernally and centered at the nipple line on the mid-sternum and signal carrying means leading from the sensing means out of the body,

(c) compression indicating system including compression sensing means located in the thoracic cavity substernally and centered at the nipple line on the mid-sternum and a conduit leading from the sensing means out of the body,

(d) air flow sensing means removably connected to the flushing orifice,

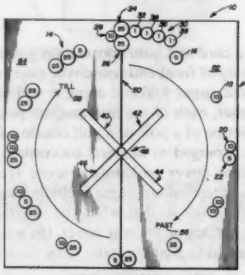
(e) pumping means connected to an inflatable envelope located on the outside surface of the body.

4,331,427

EDUCATIONAL TIME TEACHING DEVICE

Dale A. Dotson, 1005 Mantooth, Lufkin, Tex. 75901

Filed Nov. 10, 1980, Ser. No. 205,176
Int. Cl.³ G09B 19/12
U.S. Cl. 434—304 9 Claims



1. An educational time teaching device, comprising:

(a) a base member;

(b) a plurality of coins mounted on said base member and defining a minute scale from five to sixty in five unit intervals thereon, based upon the value of said coins, said minute scale defining a first diameter;

(c) a dial member having an hour scale and defining a second diameter smaller than said first diameter;

(d) first means operatively positioned for detachably mounting said dial member in angularly aligned superposed relationship with said minute scale on said base member;

(e) an hour hand; and

(f) second means operatively positioned for pivotally and detachably mounting said hour hand at least on said base member.

4,331,428

MODEL OF THE HUMAN KNEE SUITABLE FOR TEACHING OPERATIVE ARTHROSCOPY

Eugene J. Chandler, 5702 E. Camelback Rd., Phoenix, Ariz. 85018

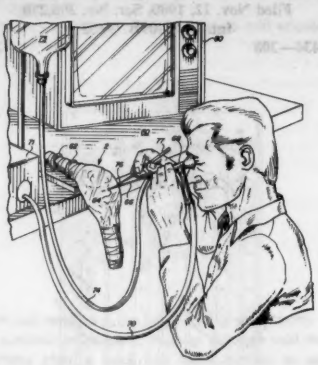
Filed Sep. 15, 1980, Ser. No. 187,509
Int. Cl.³ G09B 23/30
U.S. Cl. 434—274 28 Claims

1. A method of producing a model of the human knee, the model being suitable for learning and practicing arthroscopic surgical techniques, said method comprising the steps of:

a. providing a bovine leg having femur and tibia bones and a knee joint therebetween;

b. modifying the knee joint of the bovine leg to facilitate the insertion of an arthroscope into the knee joint;

c. surrounding the modified knee joint with a synthetic, flexible, fluid-impervious covering; and



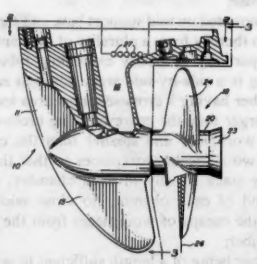
d. sealing the covering to the femur and tibia bones above and below the knee joint, respectively, for encasing the knee joint to allow continuous irrigation thereof.

4,331,429

SYMMETRICAL PROPELLER

Roger E. Koepsel; Ronald M. Steiner, and Daniel G. Wilcox, all of Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 26, 1979, Ser. No. 106,588
Int. Cl.³ B63H 1/26
U.S. Cl. 440—49 5 Claims



1. A marine propeller comprising a hub having an exhaust gas discharge opening at the aft end thereof and a plurality of blades extending from said hub forwardly of said opening, said blades each having a thickness radially symmetrical about a rake line, a plan form symmetrical about said rake line, a maximum thickness at said rake line, rounded leading edges and the same surface blade rake on both the fore and aft faces of said blades.

4,331,430

TRIM MECHANISM WITH AUTOMATIC RETURN

Albert J. Lutzke, Oshkosh, and James M. Schiek, Omro, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jun. 16, 1980, Ser. No. 159,999
Int. Cl.³ B63H 1/14, 5/06
U.S. Cl. 440—53 12 Claims

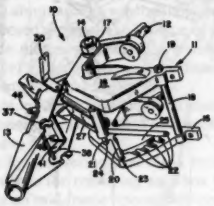
1. A tilt mechanism for a marine propulsion device comprising:

(A) a transom bracket for attachment to a boat, said transom bracket having a closed circuit cam track including a

plurality of notches circumferentially spaced about a first generally horizontal axis and a return cam surface;

(B) a swivel bracket pivotally connected to said transom bracket for pivotal movement about said first horizontal axis;

(C) a pawl assembly having one end pivotally attached to said swivel bracket for rotation about a second generally



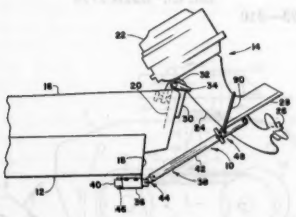
horizontal axis, said pawl assembly having a second end and a biasing means for biasing said second end to engage said cam track and said notches, said pawl assembly acting as a ratchet with said series of notches to provide a series of trim positions for said propulsion device, and further acting as a cam follower with said return cam surface to allow the automatic return of said swivel bracket from the uppermost trim position to the lowest trim position.

4,331,431

TRANSOM SAVER

Ronald L. Estes, Red Eagle Rte., Box 124A, Pawhuska, Okla. 74056

Filed Jul. 21, 1980, Ser. No. 170,882
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—53 **9 Claims**



1. A boat transom saver for use with a boat trailer to support the drive column of an outboard motor which in turn is carried by the transom of a boat, the transom saver comprising:

a bracket attachable to the bottom rear portion of a boat trailer, a longitudinal passageway provided through the bracket;

an elongated support arm slidably disposed within the passageway and comprising a forward support segment longer than the length of the longitudinal passageway of the bracket, a stop member carried by the front end of the forward segment to prevent rearward movement thereof through the passageway and an elongated rear support arm segment comprising a cradle member carried by the back end of the rear segment, a pivot pin assembly for pivotally securing the forward and rear segments together, said pivot pin assembly being capable of being passed through the bracket passageway when the segments are in mutual alignment,

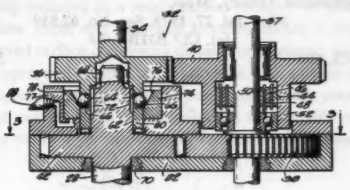
whereby the support arm may be pulled rearwardly from a stowed position until the forward segment is inside the passageway whereupon the rear segment may be pivoted upwardly so that the cradle member engages the drive column of the outboard motor.

4,331,432

HYDRAULICALLY ACTUATED TWO-SPEED TRANSMISSION FOR A MARINE PROPULSION DEVICE

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 8, 1979, Ser. No. 92,551
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—75 **44 Claims**



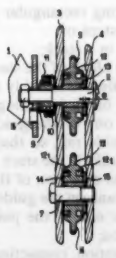
32. A marine propulsion device comprising a rotatably mounted input shaft drivingly connected to a power source, a lower unit having a rotatably mounted drive shaft, a propeller shaft rotatably mounted in said lower unit and carrying a propeller, and means drivingly connecting said drive shaft to said propeller shaft, and a two-speed transmission drivingly connecting said input shaft to said drive shaft and including a third shaft rotatably mounted in parallel relation to said input shaft and said drive shaft, first drive and driven gears in meshing engagement, second drive and driven gears in meshing engagement, means fixedly connecting three of said first drive gear to said input shaft, said first driven gear to said third shaft, said second drive gear to said third shaft, and said second driven gear to said drive shaft, a one-way overrunning clutch connecting the other of said first drive gear to said input shaft, said first driven gear to said third shaft, said second drive gear to said third shaft, and said second driven gear to said drive shaft, and a fluid pressure actuated clutch for selectively drivingly joining said input shaft and said drive shaft for common rotation.

4,331,433

CYCLE GEAR-CHANGER

Huret R. H. Marius, Nanterre, France, assignor to Etablissements Huret & Fils, Nanterre, France

Filed Nov. 28, 1979, Ser. No. 98,081
Claims priority, application France, Apr. 23, 1979, 79 10236
Int. Cl.³ F16H *11/00*
U.S. Cl. 474—79 **3 Claims**



1. A gear-changer for a cycle comprising a support movable transversely with respect to a cycle free wheel, said support having an axle, and a yoke, said yoke rotatably supporting two

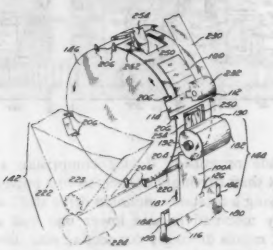
rollers each by means of a sleeve, one roller being a chain tension roller and the other roller being a chain guide roller, the yoke and the chain guide roller sleeve being pivotably movable about said axle, wherein the length of the chain guide roller sleeve and the chain tension roller sleeve is dimensioned so as to predetermine a lateral displacement of the two rollers with respect to said axle in a direction parallel to said axle.

4,331,434

METHOD AND APPARATUS FOR FORMING A CONTAINER FOR LIQUIDS

Josef Buschor, Los Gatos, Calif., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Jul. 27, 1979, Ser. No. 62,519
Int. Cl.³ B31B *1/84*
U.S. Cl. 493—67 **35 Claims**



1. A method for sealing a length of tape over an aperture formed in a carton blank and bonding said length of tape to a straw element disposed beneath said aperture comprising:

aligning said length of tape and said straw element beneath said aperture and said carton blank upon a continuously moving support surface; and

simultaneously bonding said tape length to said carton blank and a portion of said tape length to said straw element with a heater head that moves with said carton blank and which presses said tape to said carton blank and said straw for a fixed predetermined amount of time which time is independent of the support surface speed within the normal range of operational speeds so that a liquid-tight seal is formed over said aperture on said carton blank.

4,331,435

METHOD AND APPARATUS FOR ERECTING A CARTON

Ulrich G. Nowacki, Leisure City, Fla., assignor to International Paper Company, New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,402
Int. Cl.³ B31B *1/78*
U.S. Cl. 493—178 **43 Claims**

1. A method of erecting rectangular cartons from their flat blanks, comprising the steps of:

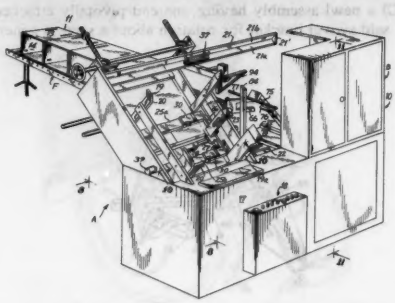
providing the blanks in a stack;

providing the bottom blank of the stack on one end of a pair of parallel guide rails; the foldably connected edges of the side panels of each blank extending in a direction parallel to the guide rails; one of the guide rails being elevated above the other guide rail, so that the bottom blank, as well as the other blanks in the stack above it, are upwardly inclined in the cross-direction of the guide rails;

moving the bottom blank on the guide rails from the stack of blanks to the other end of the pair of guide rails, to an initial folding station;

in the initial folding station, contacting each of two adjacent side panels of the bottom blank, contiguous to one of the guide rails and on vertically opposite sides of the bottom blank, with a separate means for folding the contacted side panel about the one guide rail with rotational movement of the folding means about the one guide rail while the folding means remains in contact with the side panel; the two folding means being approximately 0° apart when they contact the two adjacent side panels; and then

rotating the two folding means in opposite directions about



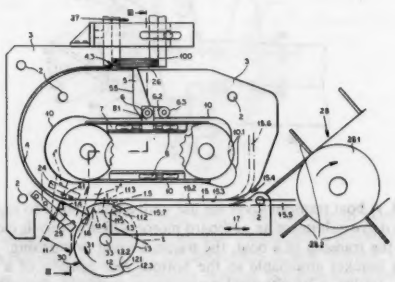
the one guide rail until the two folding means are about 90° apart, while each folding means remains in contact with one of the two adjacent side panels, to fold the two adjacent side panels 90° apart about the one guide rail and thereby to fold the bottom blank into a rectangular tube.

4,331,436

MACHINE FOR ERECTING AND COUNTERFOLDING COLLAPSED BOXES

Valentin Kuttenbaum, Laupheim, and Ernst Henle, Schwendi-Weihungszell, both of Fed. Rep. of Germany, assignors to Josef Uhlmann Maschinenfabrik GmbH & Co. KG, Laupheim, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 134,987
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913325
Int. Cl.³ B31B *1/78*
U.S. Cl. 493—310 **12 Claims**



1. A device for automatically erecting and counterbending a box from a blank at least temporarily into a prismatic form, said box having four parallel edges formed as joints between respective pairs of box sides having widths measured perpendicularly to said edges and having at least two end flaps joined to said sides at opposite extremities of said box, a pair of opposite box sides having a small width and another pair of opposite box sides having a large width, said blank having a front edge and a back edge corresponding to two of said parallel edges and spaced by a separation equal to the sum of said small width and said large width, comprising:

a frame;

first guide means on said frame for directing said blank along a path extending from a feed station to a guide outlet juxtaposed to an erecting station;

a carrier arm movably mounted on said frame for engaging said back edge to push said blank along said path;

a stopper on said frame at said erecting station for engaging said front edge to arrest said blank upon emergence thereof from said first guide means and for coacting with said carrier during a spreading phase to exert on said box a compressive force oriented along a diagonal extending through said back edge and said front edge to said stopper, said stopper being shiftably mounted on said frame for revolving about an axis substantially parallel to said edges to be disposed, upon the mergence of said blank from said first guide means, substantially transversely to said path and parallel to said edges and at a distance from said outlet at least equal to said separation;

second guide means on said frame extending from said erecting station for receiving said box upon the termination of a collapsing phase;

feed means for delivering said blank to said feed station;

conveyor means for removing said box from said device;

drive means on said frame operatively connected to said arm for driving same along said path, past said erecting station and along said second guide means, whereby said blank is pushed through said first guide means, said arm is shifted relatively toward said stopper for creating said force, and said box is pushed from said erecting station through said second guide means to said conveyor means, said drive means being operatively connected to said stopper for revolving same about said axis in synchronism with the motion of said arm; and

arresting means on said frame for limiting lateral motion of said box during pushing thereof by said arm from said erecting station to said second guide means, said stopper being mounted on a rotary carrier rotatable by said drive means about said axis, said arresting means including a curved surface contiguous on said rotary carrier with said stopper, said stopper being provided with a catch surface projecting substantially perpendicularly with respect to said curved surface and extending substantially toward said outlet upon an issuing of said front edge therefrom.

4,331,437

PROCESS FOR IMPARTING WRINKLE RESISTANCE TO CELLULOSIC TEXTILE MATERIALS AND MATERIALS OBTAINED THEREBY

Kenneth H. Remley, Warren, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Filed Jul. 11, 1980, Ser. No. 168,895
Int. Cl.[3] D06M *13/40, 9/00*
U.S. Cl. 8—115.7 10 Claims

1. A process for imparting wrinkle resistance to a fibrous cellulosic textile material comprising:

(a) contacting the material with an aqueous mixture of urea and at least one phosphoric acid, wherein the mole ratio of urea to the phosphoric acid is about 4:1 to 8:1, to deposit thereon about 7.0–35% by weight of urea, and about 3.0–9.0% by weight of the phosphoric acid, based on the weight of the untreated material;

(b) heating the treated material to obtain a phosphorylated material;

(c) contacting the phosphorylated material with an aqueous solution of cyanamide to deposit thereon about 0.75–13.5% by weight of cyanamide, based on the weight of the phosphorylated material; and

(d) heating the treated material to impart wrinkle resistance thereto.

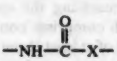
4,331,438

PROCESS FOR ELIMINATING FREE FORMALDEHYDE IN TEXTILE MATERIALS TREATED WITH DIMETHYLOLATED CARBAMATES

Panemangalore S. Pai, Charlotte, N.C., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 10, 1980, Ser. No. 205,490
Int. Cl.[3] D06M *13/40*
U.S. Cl. 8—187 11 Claims

1. In a process for finishing textile material comprising natural or regenerated cellulose by impregnating said textile material with a solution or dispersion comprising a dimethylolated aliphatic carbamate and an acid or acid-forming catalyst and drying and curing the impregnated textile material, the improvement comprising eliminating free formaldehyde from said impregnated textile material after drying and curing said impregnated textile material by treating said impregnated textile material with an effective amount of a combination consisting of a formaldehyde acceptor and a volatile inert carrier, said combination containing about 2 to about 60 percent by weight of said formaldehyde acceptor in the form of a compound having a molecular weight of less than 200 and containing the group



wherein X is O, NH, or CH_2 and Y is O, NH, or S wherein said dimethylolated aliphatic carbamate is selected from at least one of the group consisting of dimethylolated alkyl carbamates.

4,331,439

PROCESS FOR PREVENTING COLOR MIGRATION IN COLORED MOLDINGS OF POLYOXYMETHYLENE RESINS

Minoru Hamada; Hisaya Sakurai, both of Kurashiki; Jyunzo Masamoto, Fuji; Takeo Yoshida, and Hiroshi Hazawa, both of Kurashiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 66,388, Aug. 14, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,364
Claims priority, application Japan, Aug. 24, 1978, 53-102263
Int. Cl.[3] D06P *5/02*
U.S. Cl. 8—442 17 Claims

1. A process for preventing color migration in molded articles of polyoxymethylene resins, which comprises molding a polyoxymethylene resin into a shaped article, dyeing said article in a dye bath comprising a solvent containing a disperse dye, and treating said article in a solvent containing a compound having at least one isocyanate group.

4,331,440

USE OF GUM S-88 IN PRINTING PASTE SYSTEMS

Joseph S. Racciato, San Diego, Calif., assignor to Merck & Co. Inc., Rahway, N.J.

Filed Mar. 17, 1980, Ser. No. 130,797
Int. Cl.[3] D06P *1/48;* C07G *11/00, 17/001*
U.S. Cl. 8—495 5 Claims

1. A method for printing a textile or substrate comprising contacting the substrate with a printing paste comprising about 0.1–5% heteropolysaccharide S-88; said S-88 being prepared by fermentation under controlled conditions of culture ATCC 31554; and said S-88 containing 10–20% glucuronic acid, and the neutral sugars: mannose, glucose, and rhamnose in the approximate molar ratios of 10–30%; 30–40% and 35–45%, respectively and 3–7% O-acetyl; said substrate either having been pre-wet with a solution comprising 5–20% electrolyte which is an alkali metal halide; or the substrate having been subsequently contacted with a solution comprising 5–20% electrolyte which is an alkali metal halide.

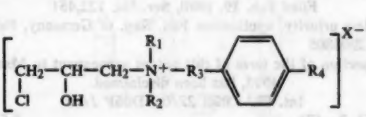
4,331,441

METHOD OF DYEING CELLULOSE FIBERS BY ANIONIC DYES, COMPOUND FOR USE IN SUCH METHOD, AND METHOD OF MAKING THE COMPOUND

Drahomir Dvorsky, and Karel Cerovsky, both of Dvur Kralove n/Labem, Czechoslovakia, assignors to Vyzkumny ustav zuslechtovaci, Dvis Kralove n/Labem, Czechoslovakia

Filed Jul. 28, 1980, Ser. No. 182,868
Claims priority, application Czechoslovakia, Jul. 26, 1979, 5195-79
Int. Cl.[3] D06P *1/645;* C07C *87/30*
U.S. Cl. 8—542 3 Claims

1. A process for dyeing fibrous materials comprising at least 15% cellulosic fibers with anion colorants, comprising subjecting the fibrous material, in a time span extending from a time before the dyeing operation to a time simultaneous with the dyeing operation, to the action of a cationic agent contained in an alkaline aqueous bath, in which a cationizing agent of the general formula



is used wherein R_1, R_2 are alkyls with 1–3 carbon atoms, R_3 is alkylene with 1–2 carbon atoms, R_4 is chosen from the group consisting of hydrogen atom and alkyl with 1–2 carbon atoms, and X is chosen from the group consisting of anion of a strong inorganic and an organic acid.

4,331,442

PROCESS FOR DYEING CELLULOSE TEXTILE MATERIALS BY THE PADDING PROCESS

Heinrich Uhlig, Leverkusen; Klaus Langheinrich, Berg.-Gladbach, and Udo-Winfried Hendricks, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 30, 1977, Ser. No. 838,210
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644436
Int. Cl.[3] D06P *1/38, 1/613*
U.S. Cl. 8—564 15 Claims

1. A process for dyeing a textile material consisting entirely

or partially of natural or regenerated cellulose with a direct dyestuff, said process consisting essentially of:

(a) padding the textile material with an aqueous dyeing liquor comprising a direct dyestuff, a cyclic carboxylic acid amide of the formula

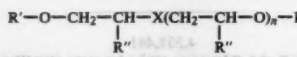
in which

R is a hydrogen atom, a C_1–C_4-alkyl radical, or a C_1–C_4-hydroxyl radical;

A is an alkylene radical required to complete a five-membered to seven-membered ring system unsubstituted or substituted by halogen, C_1–C_4-alkyl, or C_1–C_4-hydroxyalkyl and

n is 0 or 1;

and a glycol compound of the formula



in which

R′ and R‴ independently of one another are hydrogen C_1–C_5-alkyl, or acetyl;

R″ is hydrogen or methyl;

n is 0 to 2; and

X is oxygen or sulphur; and

(b) fixing the dyestuff with dry heat or the action of steam whereby improved dyeing yields are obtained.

4,331,443

CONCENTRATED SOLUTIONS OF WATER-INSOLUBLE COUPLING COMPONENTS

Rudolf Kostka, and Hasso Hertel, both of Mühlheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,451

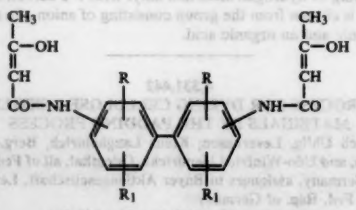
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906805

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.³ C09B *27/00*; D06P *1/02*

U.S. Cl. 8—671 **8 Claims**

1. A concentrated solution of an acetoacetic acid diphenylamide, containing one or more compounds of formula (1)



(in which R and R_1 are identical or different and each is hydrogen, halogen, lower alkyl or lower alkoxy), water, sodium hydroxide or potassium hydroxide or both, and one or more aliphatic solvents selected from the group of mono- to hexaethyleneglycol mono-(lower alkyl) ethers.

4,331,444

COMPETITIVE IMMUNOASSAY USING SILVER HALIDE FOGGING AGENT

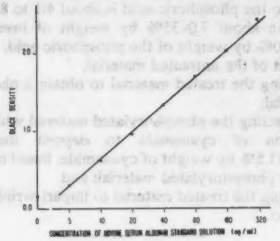
Yuji Mihara; Nobuhito Masuda, both of Minami-ashigara; Nobuo Hiratsuka; Takushi Miyazako, both of Tokyo, and Shigeo Hirano, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 3, 1980, Ser. No. 126,919

Claims priority, application Japan, Mar. 1, 1979, 54-23963

Int. Cl.³ G01N *33/54, 33/58*

U.S. Cl. 23—230 B **9 Claims**



1. A method for performing a competitive immunoassay for a trace component in a sample comprising:

(1) adding a labeled antigen or labeled antibody to said sample in a competitive immunoassay protocol, said label being a silver halide fogging agent,

(2) permitting the immune reactions to take place,

(3) separating the free labeled antigen or free labeled antibody from the resulting bound labeled antigen or bound labeled antibody,

(4) developing silver halide in the presence of either free or bound labeled antigen or free or bound labeled antibody, and

(5) measuring the optical density resulting from step (4).

4,331,445

REDUCTION OF SPONTANEOUS COMBUSTION OF COAL

Edward J. Burns, Omaha, Nebr., assignor to InterNorth, Omaha, Nebr.

Filed Apr. 3, 1981, Ser. No. 250,661

Int. Cl.³ C10L *9/02, 5/24*

U.S. Cl. 44—6 **5 Claims**

1. A method for decreasing the spontaneous combustion tendency of coal which comprises contacting the coal with a composition comprised of at least about 2 percent polyethylene oxide and the balance water, and then drying the coal.

4,331,446

SYNTHETIC COAL LOG

Edward F. Draper, and Paul E. Bentley, both of Norfolk, Va., assignors to EPA Energy Products, Inc., Norfolk, Va.

Filed May 5, 1980, Ser. No. 146,789

Int. Cl.³ C10L *5/14, 5/32*

U.S. Cl. 44—24 **12 Claims**

1. A method of making a solid fuel element comprising the steps of:

(a) mixing a major portion of coal and a minor portion of a mixture of paraffin wax in a solid state and a surfactant so that a solid state mixture is formed, and

(b) compressing said solid state mixture to form said solid fuel element.

8. A solid fuel element consisting essentially of:

(a) a major portion of coal,

(b) a minor portion of paraffin wax, and

(c) a minor portion of surfactant.

4,331,447

COAL TREATMENT FOR ASH REMOVAL AND AGGLOMERATION

Hiroshi Kamada, Ebina; Kazumoto Saito, Fujimi; Toshiaki Murata, Toda; Tadahisa Miwa, Ohmiya; Masao Goto, Ohmihachiman; Toshiro Fukuda, Ohtsu, and Hitoshi Taguchi, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto and The Coal Mining Research Centre, Tokyo, both of, Japan

Filed Jul. 17, 1980, Ser. No. 169,807

Claims priority, application Japan, Mar. 4, 1980, 55/27725; Mar. 5, 1980, 55/28449; Mar. 5, 1980, 55/28450; Mar. 5, 1980, 55/28451; Mar. 5, 1980, 55/28452; Mar. 5, 1980, 55/28453; Mar. 6, 1980, 55/28948

Int. Cl.³ C10L 5/14

U.S. Cl. 44—20 27 Claims

1. A process for treating coal particles for ash removal therefrom as well as agglomeration thereof, which comprises adding an oil fraction as a binder to an aqueous slurry of coal particles which contains a sufficient amount of at least one surfactant to cause ash removal and agglomeration of coal particles, and agitating the mixture to effect the ash removal and agglomeration of the coal particles.

22. A process for treating coal particles for ash removal therefrom as well as agglomeration thereof, which comprises adding an oil fraction as a binder to an aqueous slurry of coal particles which contains a sufficient amount of a surfactant and an inorganic electrolyte to cause ash removal and agglomeration of coal particles, and agitating the mixture to effect the ash removal and agglomeration of the coal particles.

4,331,448

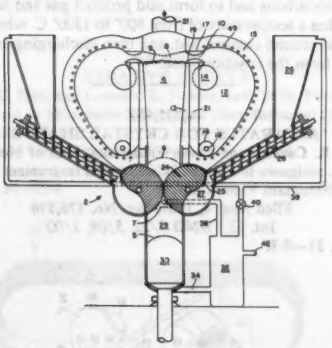
GASIFICATION REACTOR AND FEED APPARATUS

George M. Bretz, Verona, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1981, Ser. No. 237,101

Int. Cl.³ C10J 3/30

U.S. Cl. 48—86 A 10 Claims



1. A gasification reactor comprising:

(a) a vertically oriented chamber comprising a pyrolysis section, a lower feed opening, and a primary combustion section located above said pyrolysis section with an aperature for receiving reaction gases, a plurality of lateral passages near the top of the primary combustion section for transferring partially reacted product and gases to a plurality of secondary reaction chambers;

(b) said secondary reaction chambers, having a first conduit for removing product gases and a second conduit for removing by-product solids;

(c) at least two contiguous, horizontally arranged counter rotating partially cut away rotary valves having a sinusoidal like surface, each valve contained within a circular channel, and positioned below said feed opening;

(d) a feed piston contained within a vertical channel extending from below said valves and through a part of said rotary valves channel and communicating with said feed opening, said piston movable up and down from a base position in said channel to said feed opening;

(e) means for feeding carbonaceous solid fuel to said rotary valves;

(f) means for rotating said rotary valves;

(g) means for advancing and retracting said feed piston;

(h) means for recovering said product gases, and by-product solids;

(i) means for adding reaction gases to said primary combustion section; and

(j) means for pressurizing said reactor.

10. A feed apparatus comprising:

(a) a pair of contiguous horizontally aligned counter rotating partially cut away rotary valves having a sinusoidal like surface, each valve contained within a circular channel to which feed can be gravity fed when the valves are in an open position, and the feed entrance closed and the channel cleared with the feed deposited at a lower level when the valves are rotated and (b) a vertical channel and a feed piston movable in said vertical channel extending from below said valves to an area above said valves, said circular channels extending into said vertical channel to alternatively open and close said vertical channel, to said piston when said valves are rotated, said piston movable from a retracted base position below said valves to an area above said valves when said vertical channel is open.

4,331,449

PROCESS OF PRODUCING TOWN GAS FROM METHANOL

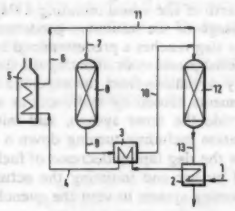
Heinz Jockel, Büttelborn; Friedrich W. Möller, Friedrichsdorf; Hans J. Renner, and Gerd Siebert, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 15,377, Feb. 26, 1979, abandoned. This application Sep. 12, 1980, Ser. No. 186,865

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809447

Int. Cl.³ C01B 3/02

U.S. Cl. 48—197 R 5 Claims



1. A process of producing a town-gas-grade fuel gas from methanol and water which comprises the steps of:

A. Feeding 80 to 95% by weight of a mixed feedstock comprising water vapor and methanol in a weight ratio of 0.5 to 1.5 at a temperature of 300° to 700° C. to a first reaction zone containing a nickel catalyst with 25 to 50 weight percent nickel as the active component;

B. withdrawing a gaseous effluent from said first reaction zone, said effluent consisting essentially of methane, water vapor, carbon oxides and hydrogen;

C. cooling the effluent gas from the first reaction zone to a temperature of about 250° to 350° C. before it is mixed with the remainder of said mixed feedstock;

D. to a second reaction zone feeding a mixture of said gaseous effluent together with the remainder of said mixed feedstock, the temperature of said gaseous effluent being

fed to said second reaction zone being in the range of about 250° to 350° C., the temperature of said second reaction zone being 200° to 400° C., and in said second reaction zone contacting the mixture with a catalyst containing 40 to 70% by weight copper and 5 to 20% by weight vanadium;

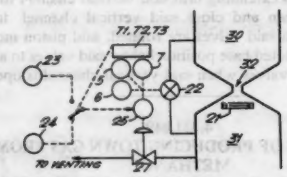
E. from said reaction zone withdrawing a product gas containing methane, carbon oxides, hydrogen and water vapor, said product gas having a lower calorific value per standard cubic meter than said gaseous effluent from said first reaction zone; and

F. cooling said product gas and employing the same as a town-gas-grade fuel gas having a calorific value below 18,000 kJ per standard cubic meter.

4,331,450
COAL GASIFICATION PLANT SLAG TAPPING PROCESS

Richard P. Elliott, Kinross, Scotland, assignor to British Gas Corporation, London, England

Filed Sep. 8, 1980, Ser. No. 184,813
Int. Cl.³ C10J 3/08
U.S. Cl. 48—210 **1 Claim**



1. A method for controlling the level of molten slag in a slagging coal gasifier comprising the steps of, periodically tapping the slag from the hearth of the gasifier vessel through a slag tap orifice into a quench chamber using a system of timing means which set a maximum and a minimum predetermined period of time between slag tapping operations and which set the duration time of actual slag tapping, measuring the differential pressure between the gasifier vessel and the quench chamber whereby to give an indication of the level of slag in the hearth of the vessel initiating a slag tapping operation after passage of the minimum predetermined period of time when the slag reaches a predetermined level as measured by the differential pressure, or initiating the slag tapping operation when any deviations from the expected differential pressure measurements caused by malfunctions are detected and used to override the timer system, said initiating of a slag tapping operation including turning down a burner which is located below the slag tap by decrease of fuel gas and oxygen flows to said burner and initiating the actuation of valving means of a venting system to vent the quench chamber.

4,331,451
CATALYTIC GASIFICATION

Kazuyoshi Isogaya, Yokohama; Eiiti Sugiyama, Odawara; Kenji Yoshida, and Katsutoshi Kikuchi, both of Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Toyo Engineering Corporation, both of Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 117,915
Int. Cl.³ C01B 3/38
U.S. Cl. 48—214 A **6 Claims**

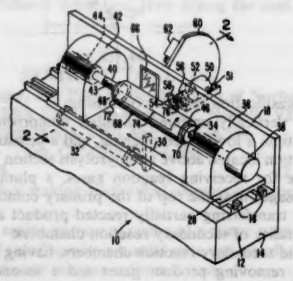
1. A continuous catalytic gasification process for converting heavy hydrocarbon distillate into a product gas which has a very low methane content and high hydrogen and carbon monoxide contents, which consists essentially of: feeding a mixture of (1) heavy hydrocarbon distillate having a specific gravity of higher than 0.7 and (2) steam or a mixture of steam and oxygen-containing gas, wherein the ratio of the number of moles of steam to the number of carbon atoms in said hydrocarbon distillate is from 0.3 to 7, into a reaction zone which is at a pressure of from atmospheric pressure to 100 Kg/cm²; in said reaction zone, first flowing said mixture through a space free of catalyst so that said mixture remains in said space for from 0.05 to 5 seconds and the temperature of said mixture leaving said space is higher than 500° C., then flowing said mixture through a catalyst bed consisting essentially of from 50 to 100 wt. % of chromium oxide and the balance is one or more materials selected from the group consisting of aluminum oxide, zirconium oxide, alkaline earth metal oxides, nickel oxide and cobalt oxide, so that said mixture contacts said catalyst bed for from 0.1 to 10 seconds and is converted into said product gas and said product gas has a temperature of from 800° to 1100° C. when it exits from said catalyst bed, and then discharging said product gas from the reaction zone.

3. A continuous catalytic gasification process for converting heavy hydrocarbon distillate into a product gas which has a very low methane content and high hydrogen and carbon monoxide contents, which consists essentially of: feeding a mixture of (1) heavy hydrocarbon distillate having a specific gravity of higher than 0.7 and (2) steam or a mixture of steam and oxygen-containing gas, wherein the ratio of the number of moles of steam to the number of carbon atoms in said hydrocarbon distillate is from 0.3 to 7, into a reaction zone which is at a pressure of from atmospheric pressure to 100 Kg/cm²; in said reaction zone, flowing said mixture through a first catalyst bed consisting essentially of a first catalyst selected from the group consisting of calcium aluminate, alkali metal aluminate and tungsten-containing nickel catalyst, said first catalyst being effective to convert the higher hydrocarbons in said hydrocarbon distillate into lower hydrocarbons, then flowing said mixture through a second catalyst bed consisting essentially of from 50 to 100 wt. % of chromium oxide and the balance is one or more materials selected from the group consisting of aluminum oxide, zirconium oxide, alkaline earth metal oxides, nickel oxide and cobalt oxide, so that said mixture contacts said first and second catalyst beds for a total time of from 0.1 to 10 seconds effective to complete the cracking and gasification of the hydrocarbons and to form said product gas and said product gas has a temperature of from 800° to 1300° C. when it exits from said second catalyst bed, and then discharging said product gas from the reaction zone.

4,331,452
APPARATUS FOR CRYSTAL SHAPING

Donald R. Causey, and Owen Fredericks, both of Healdsburg, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 4, 1980, Ser. No. 175,174
Int. Cl.³ B24B 7/22, 5/04, 1/00
U.S. Cl. 51—5 R **1 Claim**



1. A unitary apparatus for shaping a crystal ingot into a crystal blank at a single station, the resulting crystal blank having a cylindrical surface with a flat thereon wherein the flat is oriented with respect to a crystal plane selected by observing reflected x-rays and wherein the flat extends along the length

of the crystal parallel to the axis of the cylindrical surface, the apparatus comprising:

a base;

means mounted on the base for mounting the crystal, said mounting means including therewith means for rotating the crystal continuously about the axis thereof and means for translating the crystal back and forth in the direction that the axis extends while continuously rotating the crystal ingot;

a grinding wheel having a flat grinding surface extending perpendicular to the axis of rotation of the grinding wheel to provide a radial grinding face, the grinding wheel having a diameter less than that of the crystal ingot;

means for mounting the grinding wheel on the base with the axis of rotation thereof extending perpendicular to the axis of the mounted crystal ingot, said grinding wheel mounting means including means for rotating the grinding wheel and means for moving the grinding wheel in the direction of its axis of rotation to move the radial grinding face into engagement with the crystal ingot, wherein as the crystal ingot is rotated and translated the grinding wheel abrades the surface of the ingot to generate a cylindrical outer surface thereon;

an x-ray source and receptor mounted on the base and aligned with the surface of the crystal wherein as the crystal is slowly rotated an area for generating a flat thereon is selected when the intensity of reflected x-rays is at a maximum, and

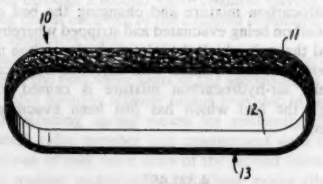
means for translating the crystal in the direction of its axis without rotating the crystal and while rotating the grinding wheel with the radial grinding face of the grinding wheel in engagement with the crystal to generate the flat, whereby a crystal ingot is shaped into a cylindrical crystal blank with a flat thereon by use of a single apparatus at a single station without having to manually handle the crystal between the cylindrical shaping, x-ray measuring and flat generating operations.

4,331,453

ABRASIVE ARTICLE

Donald E. Dau, and Leonard E. Nelson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1979, Ser. No. 90,146
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—298 **5 Claims**



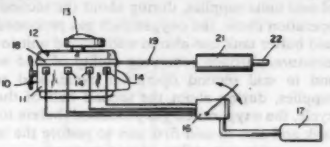
1. An abrasive article especially suited for offhand and automated article finishing having a lofty, non-woven, three-dimensional abrasive layer adhesively bonded to a stretch-resistant woven fabric, wherein the improvement comprises utilizing as said adhesive binder a polyurethane binder comprising the reaction product of poly(1,4-oxybutylene)glycol diisocyanate having a molecular weight of about 500 to 4000 and a reactive compound having at least one active hydrogen atom capable of reacting with the isocyanate groups wherein said reactive compound is selected from the group consisting of water, diol, triol, primary diamine and mixtures thereof.

4,331,454

EXHAUST FILTER REJUVENATION METHOD

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 20,573, Mar. 15, 1979. This application Jun. 21, 1979, Ser. No. 50,568
Int. Cl.³ B01J *8/02*; F01N *3/15*
U.S. Cl. 55—20 **3 Claims**



1. Method for rejuvenating the gas pervious bed (29) of an exhaust gas filter (21) containing an electrically actuated heater element (36), which filter is communicated with an internal combustion engine, into which a fuel/air mixture is introduced, and through which bed (29) a stream of hot exhaust gas is passed whereby to retain combustible particles from said exhaust gas stream on said bed, which method includes the steps of;

sensing the pressure established within said filter by said exhaust gas stream at a point upstream of said gas pervious bed,

sensing the temperature within the gas pervious bed,

heating said bed to a sufficient temperature to combust carbon particles which have been retained therein in response to a predetermined level of pressure upstream of the bed,

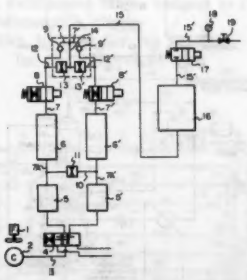
and adjusting the fuel/air mixture which is introduced to said internal combustion engine to provide an air rich mixture and consequently to enhance the burning of carbon particles by forming an exhaust gas stream having an excess of combustion supporting gas therein.

4,331,455

METHOD OF PRODUCING OXYGEN RICH GAS UTILIZING AN OXYGEN CONCENTRATOR HAVING GOOD START-UP CHARACTERISTICS

Toru Sato, Yonago, Japan, assignor to Osaka Oxygen Industries, Ltd., Osaka, Japan

Filed May 9, 1980, Ser. No. 148,502
Claims priority, application Japan, May 11, 1979, 54/58318
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—21 **2 Claims**



1. A method of operating an oxygen-rich gas generating system so that it can generate an oxygen-rich gas immediately upon restarting even after the system has been stopped for a long period of time, said system including two parallel-connected moisture/nitrogen removing units comprising a first

unit and a second unit, a compressor for supplying air to said units, a buffer tank for storing the gas processed by said unit, and an on-off switch which is turned on when the system is to be started and thereafter turned off when the system is to be stopped, said method comprising the steps of:

(a) starting said system by turning on said on-off switch;

(b) operating said units so that first and second operation cycles are alternated, in said first operation cycle, the first of said units supplies, during about the second half of the operation cycle, the oxygen-rich gas processed therein to said buffer tank and also to said second unit to restore the moisture/nitrogen removing ability of said second unit, and in said second operation cycle, said second unit supplies, during about the second half of the operation cycle, the oxygen-rich gas processed therein to said buffer tank and also to said first unit to restore the moisture/nitrogen removing ability of said one unit;

(c) maintaining the operation of said units even after turning-off of said switch so that the one of said units then producing oxygen-rich gas will complete the operation cycle during which it supplies a part of the oxygen-rich gas processed therein to the other unit to restore the moisture/nitrogen removing ability of the other unit;

(d) stopping said other unit when said one unit has completed said operation cycle during which the moisture/nitrogen removing ability of said other unit is restored;

(e) causing the gas stored in said buffer tank to flow back into the unit which was producing oxygen-rich gas when the on-off switch was turned off and which has now completed said operation cycle, for a period of time sufficient to restore the moisture/nitrogen removing ability of said unit; and

(f) stopping said one unit and thereafter keeping all the system components in their respective conditions as of the completion of step (e), whereby they are ready for restarting for immediate production of oxygen-rich gas.

4,331,456

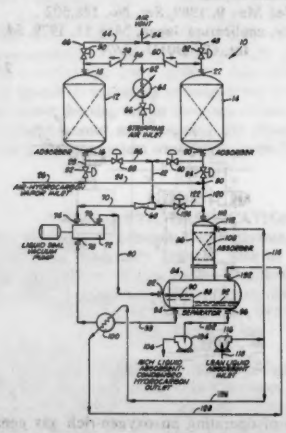
PROCESS FOR RECOVERING HYDROCARBONS WITH AIR-HYDROCARBON VAPOR MIXTURES

Robert E. Schwartz; Harold L. Dinsmore, both of Tulsa; Donald J. Peters, Broken Arrow, and Gary W. Long, Tulsa, all of Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation of Ser. No. 46,765, Jun. 8, 1979, Pat. No. 4,261,716. This application Jun. 27, 1980, Ser. No. 163,587

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **6 Claims**



1. An improved process for recovering hydrocarbons from an inlet-air hydrocarbon mixture comprising the steps of:

(a) flowing said inlet mixture through a first bed of activated carbon whereby said hydrocarbons in said mixture are adsorbed on said bed and a residue gas stream comprised of substantially hydrocarbon-free air is produced;

(b) venting said substantially hydrocarbon-free air to the atmosphere;

(c) evacuating a second bed of activated carbon having hydrocarbons adsorbed thereon by subjecting said bed to pumping with a liquid seal vacuum pump whereby a major portion of said hydrocarbons are desorbed from said bed and a hydrocarbon-rich air-hydrocarbon vapor mixture containing liquid from said liquid seal vacuum pump and condensed hydrocarbon liquids is produced;

(d) introducing a quantity of hydrocarbon-free air into said second bed while continuing to evacuate said bed by pumping with said liquid seal vacuum pump whereby additional hydrocarbons are stripped from said bed and additional air-hydrocarbon vapor mixture containing liquid from said liquid seal vacuum pump and condensed hydrocarbon liquids is produced;

(e) further evacuating said second bed by ejector jet pumping while continuing to evacuate said bed by pumping with said liquid seal vacuum pump whereby yet additional hydrocarbons are desorbed from said bed and additional air-hydrocarbon vapor mixture is produced;

(f) separating the liquid from the liquid seal vacuum pump and the condensed hydrocarbon liquids from each other and from the air-hydrocarbon vapor mixture produced in steps (c), (d) and (e);

(g) cooling the separated liquid seal vacuum pump liquid by passing said liquid in heat exchange relationship with a stream of lean liquid absorbent;

(h) recycling the cooled liquid seal vacuum pump liquid to said liquid seal vacuum pump;

(i) contacting the air-hydrocarbon mixture separated in step (f) in an absorber with a lean liquid absorbent having an affinity for hydrocarbons whereby a major portion of the hydrocarbons are removed therefrom, a hydrocarbon-rich liquid absorbent is produced and a residue gas stream comprised of air and a minor portion of hydrocarbons is produced;

(j) utilizing a portion of said residue gas stream of step (i) for effecting the ejector jet pumping of step (e);

(k) combining the hydrocarbon liquids separated in step (f) with the hydrocarbon-rich liquid absorbent;

(l) combining the remaining of said residue gas stream produced in step (i) with said inlet air-hydrocarbon mixture of step (a) whereby hydrocarbons contained therein are adsorbed on said first bed of solid adsorbent; and

(m) periodically changing the flow pattern of said inlet air-hydrocarbon mixture and changing the bed of activated carbon being evacuated and stripped whereby when the bed through which the inlet air-hydrocarbon mixture is flowing becomes loaded with adsorbed hydrocarbons, the inlet air-hydrocarbon mixture is caused to flow through the bed which has just been evacuated and stripped.

4,331,457

DEVICE PREFERABLY FOR DRIERS FOR COMPRESSED AIR

Bengt O. J. S. Mörner, Askim, Sweden, assignor to SAB Automotive AB, Sweden

PCT No. PCT/SE79/00034, § 371 Date Oct. 22, 1979, § 102(e) Date Oct. 22, 1979, PCT Pub. No. WO79/00642, PCT Pub. Date Sept. 6, 1979

PCT Filed Feb. 16, 1979, Ser. No. 189,961

Claims priority, application Sweden, Feb. 20, 1978, 7801910

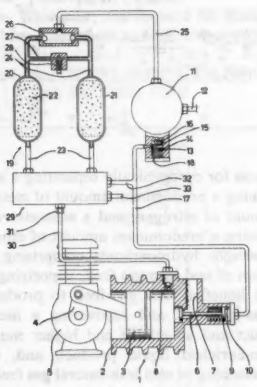
Int. Cl.³ B01D *53/04*

U.S. Cl. 55—163 **6 Claims**

1. An air controller for use in a compressed air producing plant including an air compressor and a compressed air drying device disposed downstream of the compressor and including

two containers each filled with water absorbing, air permeable charge, the containers being arranged in parallel relative to each other and each having an inlet adapted to communicate with a pressure side of said compressor, and an outlet adapted to communicate with further sections of the plant, the outlets being interconnected by a shunt pipe having a reduced rate of flow relative to the rate of flow through any of the respective outlets of the containers, the controller effecting alternate purge of the charge in the containers by a countercurrent passage of dried air through one of said containers to remove water accumulated therein, said controller comprising a housing including an inlet port adapted to communicate with a source of wet pressurized air, a first outlet port and a second outlet port, each of said outlet ports being adapted to communicate with a first and second one of said containers, and a venting port communicating with free atmosphere, the controller further comprising:

(a) said inlet port communicating with said outlet ports through a first and a second duct in the housing, said ducts each having an upstream and communicating with a first valve chamber through a respective valve seat, a flip-flop valve member being disposed within said first valve chamber for alternate engagement with one of said valve seats;



(b) said first and second ducts communicating with each other through a second valve chamber having two valve seats, one at each end of the chamber communicating with the respective duct;

(c) a second valve member arranged for alternately engaging one of the two valve seats of the second valve chamber;

(d) a valve member retainer means provided in said housing and including spring means for resiliently urging said second valve member into engagement with the respective one of said valve seats of the second valve chamber, said retainer means including release means allowing free displacement of said second valve member from one of the second valve chamber seats to the other on displacement of said retainer means against the force of said spring means;

(e) said second valve chamber including a vent passage communicating between the second valve chamber and said venting port, said vent passage being operatively associated with a vent shut-off means adapted to interrupt the communication between the second valve chamber and the venting port on displacement of the retainer means against the force of the spring means; and,

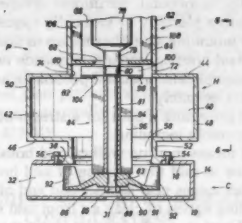
(f) power means for inducing displacement of said retainer means against the force of said spring means.

4,331,458

DEGASSING SYSTEM AND CENTRIFUGAL PUMP

Walter E. Liljestrand, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 30, 1977, Ser. No. 865,989
Int. Cl.³ B01D *19/00, 45/00*
U.S. Cl. 55—184 **48 Claims**



1. In a system for degassing liquid containing mediums, said system including a degassing vessel having an inlet and an outlet and a generally vertical shaft centrifugal pump connected to said vessel for introducing said liquid medium into said vessel, the improvement wherein said pump comprises:

means defining an inlet housing, said inlet housing having at least one inlet for the intake of said liquid medium,

means defining a pump casing having at least one outlet for the discharge of said liquid medium, said pump casing and said inlet housing being in open communication with one another,

a pump impeller rotatably mounted in said pump casing for pumping said liquid medium into said degassing vessel,

a pump frame at least partially defining a vent chamber, said pump frame including an apertured partition, said aperture providing open communication between said vent chamber and said inlet housing,

said inlet housing being disposed between said vent chamber and said pump casing, said pump casing being disposed below said inlet housing,

an inlet impeller rotatably mounted in said inlet housing closely adjacent said apertured partition and operative to direct fluid from said vent chamber into said inlet housing generally toward said pump casing,

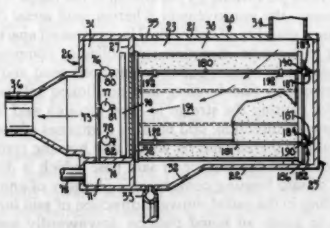
and port means providing open communication between the interior and exterior of said inlet housing and disposed below and closely adjacent said apertured partition.

4,331,459

SELF-CLEANING PULSED AIR CLEANER

George A. Copley, Farmington, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 10, 1980, Ser. No. 195,873
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—302 **2 Claims**



1. A cleaner for removing particulate matter from air comprising, in combination:

(a) a housing having first and second spaced ends and a top wall;

(b) at least one filter assembly in said housing extending between said ends, said filter assembly comprising filter means permeable to air but not permeable to particulate matter, and including a pair of flat filter members mounted vertically with a tapering space therebetween to converge toward said first end of said housing; and vertically spaced generally horizontal partitions dividing said tapering space into a plurality of vertically spaced chambers;

(c) means mounting said filter means in said housing so as to divide said housing into a first portion on one side of said filter assembly and a second portion on an opposite side of said filter assembly;

(d) means providing a path for a stream of air through said filter assembly including:

(i) inlet means in a top wall of said housing for admitting raw air to said first portion of said housing, and

(ii) outlet means near said second end of said housing for enabling egress of clean air from said second portion of said housing, so that particulate airborne matter is initially collected on said filter means;

(e) scavenging means in said housing generally opposite said filter assembly from said inlet means for removing from said first portion of said housing particulate matter separated from the raw air by said filter means; and

(f) a plurality of cleaning means associated with each filter assembly for intermittently directing pulses of clean air towards said filter assembly from said second portion and second end of said housing to momentarily dislodge said particulate matter collected thereon, and said cleaning means comprising a like plurality of nozzles, vertically separated and each directed into a chamber toward said first end of said housing, and means supplying clean air to said nozzles in a repeating sequence from upper to lower, said cleaning means being actuatable so that said pulses are directing sequentially into said filter assembly generally in the direction of air flow from said inlet means to said outlet means whereby said dislodged matter may migrate generally in the direction of said air flow toward said scavenging means.

4,331,460

MIST COLLECTOR FOR SEPARATING DROPS OF LIQUID FROM STREAMS OF GAS FOR VAPOR

Hans G. Dillmann, Eggenstein; Jürgen Furrer, Karlsruhe, and Horst Pasler, Linkenheim-Hochstetten, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,584

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931702

Int. Cl.³ B01D 50/00

U.S. Cl. 55—485 **3 Claims**

1. In a mist collector for separating drops of liquid from a gas or vapor stream and including a cylindrical vertically oriented housing having a cylindrical outer wall and metal fiber webs mounted in an annular configuration in the housing and arranged to be penetrated by the stream in the radial direction of the housing, the improvement wherein: said metal fiber webs comprise a plurality of cylindrical layers spaced apart from one another in the radial direction; said collector comprises stream inlet means and stream outlet means positioned and arranged with respect to said housing and positioned relative to said layers for causing the stream to flow through said layers in a radial inward direction; said housing comprises a base defining one axial end thereof and on which said housing rests when in operation, with the surface of said base which is directed inwardly of said housing comprising a plurality of annular steps descending in the radial outward direction of said housing and formed to guide all liquid thereon downwardly and radially outwardly, and with each said layer being supported on a respective step; the radially outermost one of said layers is separated from the cylindrical wall of said housing by an annular chamber; said stream inlet means comprises a stream inlet located in said base in alignment with said annular chamber and terminating at a level below the lowermost one of said steps; and said stream outlet means comprises a stream outlet located in said base and radially inward of the innermost one of said layers.

4,331,461

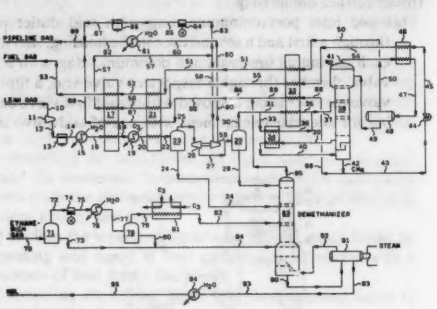
CRYOGENIC SEPARATION OF LEAN AND RICH GAS STREAMS

Joseph T. Karbosky, and Dunn M. Bailey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 10, 1978, Ser. No. 885,402

Int. Cl.³ F25J 3/02

U.S. Cl. 62—28 **39 Claims**



1. A process for cyrogenically separating a lean natural gas feed, containing a predominant amount of methane and a significant amount of nitrogen, and a separate rich natural gas feed, containing a predominant amount of ethane and higher molecular weight hydrocarbons; comprising, liquefying at least a portion of said lean gas feed, vaporizing at least a portion of said liquefied lean gas feed to produce a nitrogen-enriched gas product, and recovering a methane-enriched liquid product and an ethane and higher molecular weight hydrocarbon-enriched liquid product; and, simultaneously with said processing of said lean natural gas feed, liquefying at least a portion of said rich gas feed, vaporizing at least a portion of said liquefied rich gas feed and said ethane and higher molecular weight hydrocarbon-enriched liquid in a single vaporization step to produce a methane-enriched gas product, and recovering a natural gas liquids product.

4,331,462

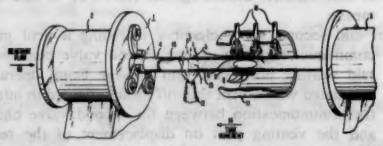
OPTICAL FIBER FABRICATION BY A PLASMA GENERATOR

James W. Fleming, Jr., Fanwood; John B. MacChesney, Lebanon, and Paul B. O'Connor, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 25, 1980, Ser. No. 143,834

Int. Cl.³ C03B 37/07

U.S. Cl. 65—3.12 **30 Claims**



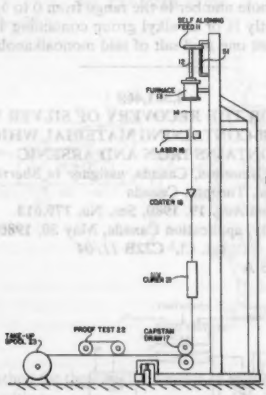
1. Process for fabrication of a glass fiber optical transmission line comprising a core section and a cladding wherein the

cladding has an index of refraction of a value lower than the maximum index of the core for energy of the wavelength to be transmitted, which comprises introducing a moving stream of a vapor mixture including at least one compound glass forming precursor together with an oxidizing medium into a tube while heating the tube so as to react the said mixture to deposit reacted mixture so as to produce a smooth glassy deposit on the inner surface of the tube, in which heating of tube and contents are by a hot zone which moves relative to the tube, the hot zone being produced by a corresponding heat source external to the tube, the said heat source comprising a plasma generator for producing a fire ball within the said vapor mixture within the tube, characterized in that the said hot zone is a tandem hot zone including at least two zones; one designated Zone I and another designated Zone II in which Zone I is generated primarily by the said fire ball and has a central region at a fire ball temperature and an enveloping inner tube wall at a temperature below the glass transition temperature of the deposit and in which Zone II is defined by that zone within which the inner tube surface is at a temperature above the said glass transition temperature.

4,331,463
SELF-CENTERING APPARATUS FOR MAKING OPTICAL FIBERS

Alfred D. Briere, Worcester, and Richard M. Klein, Framingham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 22, 1981, Ser. No. 276,320
Int. Cl.³ C03D *37/02*
U.S. Cl. 65—13 **12 Claims**



1. A self-centering device for supporting a generally cylindrically shaped, glass preform having a central axis into a fiber drawing furnace located below said device comprising

a mounting frame having an opening therewithin;

a pair of parallel, substantially horizontal shafts mounted within said frame and traversing said opening;

a first rolling bearing adapted for reciprocating movement axially along one of said shafts;

a second rolling bearing adapted for reciprocating movement axially along the other of said shafts;

a first connecting rod coupled to said first rolling bearing and to said second rolling bearing so that the resulting rod and rolling bearings combination can be reciprocated in a direction parallel to the axes of said shafts;

a third rolling bearing adapted for reciprocating movement axially along said one of said shafts;

a fourth rolling bearing adapted for reciprocating movement axially along said other of said shafts;

a second connecting rod coupled to said third rolling bearing and to said fourth rolling bearing so that the resulting rod and roller bearings combination can be reciprocated in said direction parallel to said axes of said shafts;

a first connecting rod bearing adapted for reciprocating movement axially along said first connecting rod;

a second connecting rod bearing adapted for reciprocating movement axially along said second connecting rod;

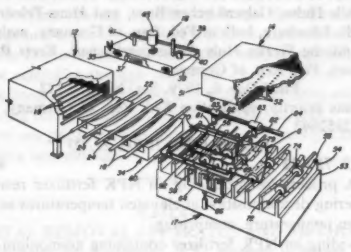
a spherical-seated, self-aligning bearing for supporting said workpiece so that said axis of said workpiece can be moved through an appreciable angle in any direction; and

a mounting carriage, coupled to said first connecting rod bearing and to said second connecting rod bearing, for having said spherical-seated, self-aligning bearing for supporting said glass preform against a resultant of a force of tension along a generally downward direction and of a force due to gravity.

4,331,464
GLASS SHEET SUPPORT OF RING-LIKE CONFIGURATION

George R. Claassen, New Kensington, and John J. Ewing, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 2, 1981, Ser. No. 239,780
Int. Cl.³ C03B *23/02*
U.S. Cl. 65—273 **6 Claims**



1. Apparatus comprising a ring-like member adapted for supporting a hot glass sheet slightly within its peripheral margin during its conveyance along a horizontal path from a first station to a second station downstream of said first station for transfer at said second station to an unloading conveyor comprising a vertically movable roll transfer section comprising an array of at least two doughnut rolls mounted on each of at least two roll support shafts and constructed and arranged over an area of said second station so that at least one of said shafts is located upstream of the center of gravity of said supported glass sheet when said ring-like member is at said second station, at least one transfer section shaft is located downstream of said center of gravity and, at least one transfer section roll on each said shaft is located on each side of said center of gravity of said supported glass sheet, means for lifting said array of rolls in unison to lift and support a glass sheet in non-tilting relation over said ring-like member, said ring-like member having an upper edge surface conforming in elevation and outline to the shape of said glass sheet and extending slightly within the peripheral margin of said glass sheet, said ring-like member having a pair of inturned downstream end portions extending toward one another in opposite transverse directions with transverse inner ends transversely spaced from one another to provide a transversely extending space therebetween slightly wider than the width of said area to provide clearance for said array of transfer section rolls when said ring-like member moves in an upstream direction relative to said lifted array of rolls and shafts toward said first station while said glass sheet moves in a downstream direction on said roll transfer section, the dimension of said transversely extending space and the time needed to transfer said hot glass sheet from said first station to said second station being such that the downstream end portion of said supported glass sheet would sag beyond tolerance

during said transfer, characterized by a rail member located within said transversely extending space in closely spaced transverse alignment with the inner ends of said downstream end portions of said rail-like member to provide short transversely extending spaces between the ends of said rail member and of said downstream end portions of barely sufficient width to provide clearance for the width of said individual rolls while enabling said ring-like member to provide support for a substantial portion of the downstream end portion of said glass sheet intermediate the inturned downstream end portions of said ring-like member during said transfer, and means to support said rail member in said position, said rail member support means being constructed and arranged to provide clearance to enable said ring-like member to move past the positions occupied by said lifted doughnut rolls and to enable said rail member support means to move with said ring-like member past the position occupied by said shafts when said roll transfer section is lifted.

4,331,465

PROCESS FOR THE PRODUCTION OF NPK FERTILIZERS RESISTANT TO SMOLDERING DECOMPOSITION AT ELEVATED TEMPERATURES

Heinrich Hahn, Gelsenkirchen-Buer, and Hans-Friedrich Kurandt, Lüneburg, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Kreis Recklinghausen, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,732

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852643

Int. Cl.³ C05B *19/00, 21/00*

U.S. Cl. 71—42 **4 Claims**

1. A process for producing an NPK fertilizer resistant to smoldering decomposition at elevated temperatures as well as at room temperature, comprising:

providing an NPK fertilizer containing ammonium nitrate, potassium chloride, calcium phosphate, mono- and diammonium phosphate in an amount of 30–70% of the entire P_2O_5 content, and ammonium sulfate in an amount of 3–25% by weight based on the fertilizer, sequentially granulating, drying and screening said fertilizer, and then as a final step, post-ammoniating said fertilizer with ammonia to the degrees needed to achieve said resistance to smoldering decomposition at elevated temperatures.

4,331,466

SELECTIVE RICE HERBICIDE

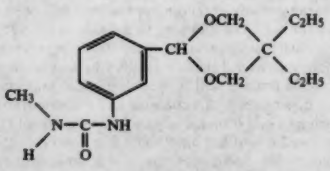
James E. Rodebush, Papillion, Nebr., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 1, 1980, Ser. No. 193,213

Int. Cl.³ A01N *43/00*

U.S. Cl. 71—88 **7 Claims**

1. The method of selectively controlling weed species occurring in paddy rice field cultures by applying postmergence postflood to said paddy field a rice selective but herbicidally effective amount of a compound having the formula.



4,331,467

NOVEL THIOUREIDOIMINOISOINDOLINONE AND USE AS PLANT GROWTH REGULATOR

Charles G. Gibbs, Shawnee Mission, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Apr. 3, 1980, Ser. No. 136,853

Int. Cl.³ A01N *43/38*; E07D *209/50*

U.S. Cl. 71—96 **6 Claims**

1. 3-Imino-2(1-methyl-3-phenylthioureido)isoindolin-1-one.

4,331,468

PROCESS FOR INHIBITING FORMATION OF NITROSAMINES

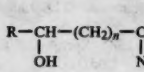
Michael L. Williams, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 152,459, May 23, 1980, abandoned. This application Apr. 22, 1981, Ser. No. 256,420

Int. Cl.³ E05B *63/14*

U.S. Cl. 71—121 **7 Claims**

1. A process for inhibiting formation of nitrosamines in nitro herbicide formulations containing (a) materials having nitrosatable nitrogen functional groups and (b) nitrosating agents or precursors thereof, which comprise admixing with one or more ingredients of such formulations, prior to the formation of said nitrosamines, a nitrosamine retarding amount of at least one monoalkanolamine having the formula



where n is a whole number in the range from 0 to 5; R and R' are independently H or an alkyl group containing 1–5 carbon atoms; or at least one acid salt of said monoalkanolamines.

4,331,469

PROCESS FOR THE RECOVERY OF SILVER VALUES FROM SILVER-CONTAINING MATERIAL WHICH ALSO CONTAINS IRON AND ARSENIC

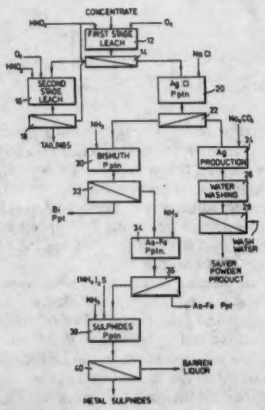
Wasyl Kunda, Edmonton, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Aug. 19, 1980, Ser. No. 179,613

Claims priority, application Canada, May 30, 1980, 353083

Int. Cl.³ C22B *11/04*

U.S. Cl. 75—0.5 A **8 Claims**



1. A process for the recovery of silver values from silver-containing material which also contains bismuth, iron and arsenic, said process comprising leaching the material under oxidizing conditions at elevated temperature and pressure in

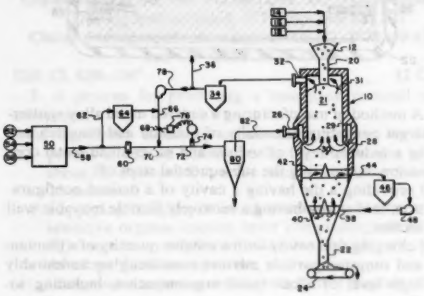
aqueous nitric acid solution to dissolve a substantial amount of silver together with substantial amounts of bismuth, arsenic, and iron, the amount of nitric acid used in said leaching being sufficient to provice nitrate ions at least stoichiometrically equivalent to the dissolved metal ions in the leach solution, separating resultant leach solution from undissolved leach residue, treating the leach solution with a solution containing chloride ions to selectively precipitate substantially all dissolved silver as silver chloride without significant coprecipitation of other dissolved metals, separating the silver chloride precipitate from the remaining solution, raising the pH of the solution to a value in the range of from about 0.4 to about 0.8 to precipitate a bismuth compound, and separating the bismuth compound from the remaining solution.

4,331,470

METHOD FOR THE DIRECT REDUCTION OF IRON IN A SHAFT FURNACE USING GAS FROM COAL

John C. Scarlett, Toledo, Ohio, and Charles W. Sanzenbacher, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Sep. 15, 1980, Ser. No. 187,024
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—35 **7 Claims**



1. A method for the direct reduction of iron oxide to metallic iron comprising:

(a) gasifying solid fossil fuel in a gasifier to produce a hot gasifier gas contaminated with sulfur;

(b) cooling a portion of said hot gasifier gas and remixing it with the uncooled portion to form a tempered gas having a temperature in the range of 750°–1050° C.;

(c) removing particulate matter from said tempered sulfur-containing gas;

(d) introducing the particulate free tempered gas to the reduction zone or reducing zone of a direct reduction shaft furnace containing a burden consisting essentially of iron oxide, carbon-containing solid fossil fuel and limestone;

(e) passing said gas through said burden in counterflow relation therewith to upgrade and desulfurize the gas by reaction with carbon and limestone in the burden and to reduce the iron oxide in the burden to highly metallized particulate iron product, and forming a spent top gas; and

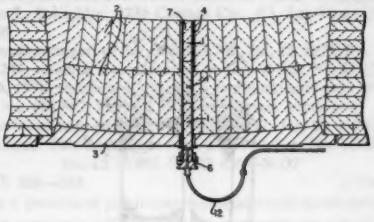
(f) removing said spent top gas, cooling and scrubbing said spent top gas to form a cool, clean fuel gas.

4,331,471

METHOD AND DEVICE FOR INSTALLING AND REPLACING A GAS PERMEABLE INSERT IN THE WALL OF A VESSEL AND FOR THE INTRODUCTION OF GAS THERETHROUGH

Wilhelm Langenfeld, Düsseldorf, Fed. Rep. of Germany, and Jacques Brihay, St.-Etienne, Belgium, assignors to Didier-Werke A.G., Wiesbaden, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 230,368
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003884
Int. Cl.³ C21C *5/48*; C21B *7/16*
U.S. Cl. 75—59 **54 Claims**



1. In a vessel, having a wall, and means for allowing the introduction of a gas through said wall into the interior of said vessel, the improvement wherein said means comprises:

a bore extending through said wall;

a tube fixed in a gas tight manner within said bore, said tube having therethrough a cylindrical passage; and

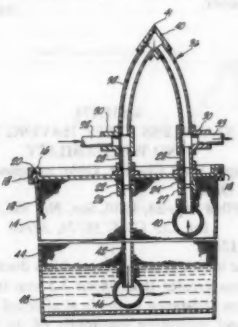
at least one gas permeable insert fitted in a gas tight manner within said passage.

4,331,472

METAL REMOVAL APPARATUS AND METHOD

James R. King, Jr., Rochester, N.Y., assignor to Ktrom Industries, Inc., Wilmington, Calif.

Filed May 21, 1981, Ser. No. 266,048
Int. Cl.³ C22B *5/00*
U.S. Cl. 75—109 **25 Claims**



1. Apparatus for removing a first metal from a solution comprising a container formed of a material substantially non-reactive with the solution, the container having an inlet for introducing influent solution into the container and an outlet for removing spent solution with first metal removed therefrom from the container, a metallic exchange medium within the container, the metallic exchange medium comprising a plurality of buoyant elements each comprising a substrate coated with a second metal, the substrate being substantially non-reactive with the influent solution and the second metal

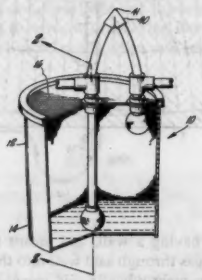
being sufficiently reactive to undergo an electrochemical exchange reaction with the first metal.

4,331,473

SILVER REMOVAL APPARATUS AND METHOD

James R. King, Jr., Rochester, N.Y., assignor to Ktrom Industries, Inc., Wilmington, Calif.

Filed May 21, 1981, Ser. No. 266,066
Int. Cl.³ C22B *11/00*
U.S. Cl. 75—109 26 Claims



17. A method for removing silver from a silver-containing solution comprising the steps of:

(a) selecting an apparatus comprising a container formed of a material substantially non-reactive with the solution, the container containing a metallic exchange medium comprising a plurality of bouyant elements each comprising a substrate coated with iron, the substrate being substantially non-reactive with the solution;

(b) introducing the solution into the container, wherein the silver and iron undergo an electrochemical exchange reaction; and

(c) recovering spent solution of reduced silver content from the container.

4,331,474

FERRITIC STAINLESS STEEL HAVING TOUGHNESS AND WELDABILITY

Ronald H. Espy, West Chester, Ohio, assignor to Armco Inc., Cincinnati, Ohio

Filed Sep. 24, 1980, Ser. No. 190,364
Int. Cl.³ C22C *38/26, 38/48*
U.S. Cl. 75—124 8 Claims

1. A ferritic stainless steel having high ductility and toughness in sections greater than about 3.2 mm in thickness, and good corrosion resistance in the heat affected zone of a weldment, said steel consisting essentially of, in weight percent, 0.03% maximum carbon, up to about 12% manganese, about 0.03% maximum phosphorus, about 0.03% maximum sulfur, about 1.0% maximum silicon, about 12% to about 26% chromium, about 0.5% maximum nickel, 0.10% to 0.5% aluminum, 0.2% to 0.45% columbium, 0.03% maximum nitrogen, about 2% maximum copper, residual titanium, and balance essentially iron, with the sum of carbon plus nitrogen not exceeding 0.05%, and columbium present in excess of the amount required to react completely with carbon.

3. The steel claimed in claim 1 or 2, wherein copper is restricted to a maximum of about 0.75%.

4,331,475

PROCESS FOR ALUMINOTHERMIC PRODUCTION OF CHROMIUM AND CHROMIUM ALLOYS LOW IN NITROGEN

Frederick H. Perfect, Wyomissing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa., a part interest

Filed Jul. 28, 1980, Ser. No. 172,545
Int. Cl.³ C21B *15/02*
U.S. Cl. 420—428 6 Claims

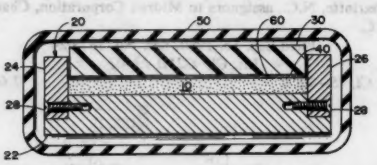
1. A process for the production of chromium-nickel alloys low in nitrogen comprising vacuum degassing a thermite mixture of chromium oxide and nickel and reducing the thermite mixture of chromium oxide and nickel in an atmosphere inert to the reactants and resulting master alloy, producing an alloy comprising about 80% chromium, about 20% nickel and less than 0.005% nitrogen, said percentages being by weight, based on the weight of the alloy.

4,331,476

SPUTTERING TARGETS WITH LOW MOBILE ION CONTAMINATION

Earl R. Helderman, Hillsboro, and Robert R. Zimmerman, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 31, 1980, Ser. No. 117,328
Int. Cl.³ B22F *3/12*
U.S. Cl. 75—214 7 Claims



1. A method of manufacturing a sintered metal alloy sputtering target consisting essentially of titanium and tungsten and having a reduced level of sodium and other alkali metal contamination, comprising the subsequential steps of:

(a) providing a die having a cavity of a desired configuration, said cavity having a relatively flexible movable wall section,

(b) charging said cavity with a suitable quantity of a titanium and tungsten particle mixture containing an undesirably high level of alkali metal contamination, including sodium,

(c) compacting said mixture into a coherent mass by the application of substantially uniform surface pressure to said movable wall section,

(d) transferring the compacted particle mass to a temperature-resistant support, and

(e) heating the supported particle mass in a low pressure environment to a temperature and for a time sufficient to fuse the particles together and volatilize a substantial portion of the alkali metal contaminants present in said mass.

4,331,477

POROUS TITANIUM-ALUMINUM ALLOY AND METHOD FOR PRODUCING THE SAME

Yoshimi Kubo, and Hitoshi Igarashi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 82,217
Claims priority, application Japan, Oct. 4, 1978, 53-122885
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—228 18 Claims

1. A porous sintered body of Ti-Al alloy consisting of titanium and aluminum, said alloy body having a density equal to

20 to 80% of its theoretical density, a specific surface area of 0.01 m^2/g or more, and pores in said porous body being essentially vacant voids from which aluminum has been diffused into titanium particles.

4,331,478

CORROSION-RESISTANT STAINLESS STEEL POWDER AND COMPACTS MADE THEREFROM

David H. Ro, Cleveland Heights; Erhard Klar, Beachwood, and Charles I. Whitman, Bay Village, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 10,956, Feb. 9, 1979, Pat. No. 4,240,831. This application Jun. 20, 1980, Ser. No. 161,551

Int. Cl.³ B22F 3/00

U.S. Cl. 75—228 9 Claims

1. A process for improving the corrosion resistance of an atomized carbon and tin containing stainless steel powder or sintered compact thereof, said powder or compact thereof containing at least about 0.05% carbon, which comprises;

adding an effective proportion of a modifier metal selected from the group consisting of niobium, titanium, tantalum, and mixtures thereof to a metal of said stainless steel prior to atomizing, said modifier metal being effective for enhancing the corrosion resistance of said atomized powder or a sintered compact thereof.

4,331,479

PROCESS OF USING LIGHT-SENSITIVE O-QUINONE DIAZIDE MATERIAL TO MAKE ALUMINUM OXIDE NAMEPLATE

Tadao Toyama, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 645,047, Dec. 29, 1975, abandoned. This application Sep. 8, 1977, Ser. No. 831,577

Claims priority, application Japan, Dec. 27, 1974, 49-676

Int. Cl.² G03C 5/00, 1/94

U.S. Cl. 430—147 12 Claims

1. A process for producing a nameplate material which comprises:

(a) anodically oxidizing an aluminum support to form a porous aluminum oxide film having a pore size of from about 50 to about 250 A and a thickness of about 5 to about 20 microns;

(b) applying to said porous aluminum oxide film a light-sensitive organic coating layer comprising one or more light-sensitive o-quinone diazides which are alkali-developable after exposure;

(c) image-wise exposing said light-sensitive organic coating layer;

(d) selectively removing, using an alkali developer solution, the exposed areas of said light-sensitive organic coating layer in correspondence to the image-wise exposure to selectively expose the aluminum oxide film;

(e) subjecting said selectively exposed aluminum oxide film to an acid treatment with an aqueous acid solution; and

(f) dyeing the exposed portions of the aluminum oxide film.

4,331,480

BIOCIDES FOR PROTECTION OF POLYMERIC MATERIALS

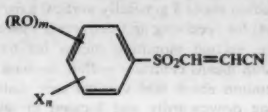
Arnold D. Gutman, and John W. Williams, both of Berkeley, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 29, 1980, Ser. No. 221,119

Int. Cl.³ C08K 5/41; C07C 121/75

U.S. Cl. 106—18.33 8 Claims

1. A method for protecting a plastic or film-forming polymer composition which is fabricated into a continuous form, against attack by bacteria, fungi, or actinomycetes, comprising incorporating into said composition or continuous form, a microbiocidally effective amount of a compound having the formula



in which R is lower alkyl; X is halogen or lower alkyl; m is 1 or 2; and n is 0, 1, 2 or 3.

4,331,481

ACIDIC ASPHALTIC COMPOSITION AND METHOD

Gordon L. Schneider, 4236 Cottage Cir., #3, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 923,799, Jul. 12, 1978, Pat. No. 4,238,241, which is a continuation-in-part of Ser. No. 878,232, Feb. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 656,957, Feb. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 489,472, Jul. 18, 1974, abandoned. This application Nov. 21, 1980, Ser. No. 208,830

Int. Cl.³ C08L 95/00; C09C 3/00

U.S. Cl. 106—283 4 Claims

1. In a process of producing asphaltic concrete comprising coating aggregate with asphalt, the improvement comprising treating said aggregate with at least 1,000 gallons of water per 100 tons of aggregate and an aqueous acid solution comprising a sulfonic acid source selected from the group consisting of sulfuric acid sludge, spent sulfuric sludge, and spent sulfuric acid to form a mixture having a pH of less than 3.5, and allowing said mixture to be stockpiled for at least about 24 hours at a temperature of about 55° F., or more, prior to coating said aggregate with said asphalt.

4,331,482

CONTINUOUSLY OPERATING CENTRIFUGE

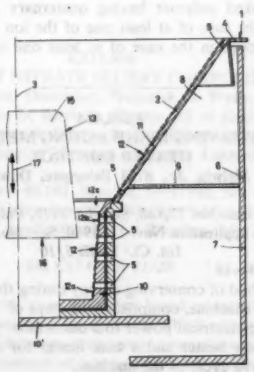
Helmut Schaper, Brunswick, Fed. Rep. of Germany, assignor to Braunschweigische Maschinenbauanstalt, Brunswick, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,852

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936659

Int. Cl.³ B04B 5/00, 11/00

U.S. Cl. 127—19 18 Claims



1. A continuously operating centrifuge for separating sugar massecuite into crystalline sugar and liquid run-off comprising: centrifugal basket screening means for said separating, said centrifugal basket screening means tapering outwardly and upwardly from a lower screening basket zone (10) to an upper rim, the portion of said centrifugal basket screening means in said lower screening basket zone (10) carrying screening means

in which the aperture density decreases in the upward direction, first means for mounting said centrifugal basket screening means for rotation about a generally vertical axis; accelerating cup means (14) for receiving and delivering massecuite fed to the centrifuge, second mounting means for mounting said accelerating cup means centrally within the basket screening means for rotation about said vertical axis; distributing bell means opening downwardly and located in said screening basket means to surround said accelerating cup means whereby said distributing bell means receives massecuite from said accelerating cup means, third mounting means for adjustably mounting said distributing bell means for rotation about said vertical axis to direct the massecuite from the lower edge of said distributing bell means toward the tapering basket screening means, and adjusting means for vertically adjusting the lower edge of said distributing bell means relative to said lower screening basket zone (10) of said basket screening means for distributing massecuite to different aperture density levels of the lower screening basket zone (10) according to the effective vertical position of the lower edge of said distributing bell means, whereby said massecuite may travel over relatively greater or lesser portions of the lower screening basket zone (10) according to the characteristics of the massecuites for uniform liquid removal and optimum separation of the crystalline sugar.

4,331,483

ION EXCHANGE PURIFICATION OF SUGAR BEET JUICE

Bernard Mirabel, Orly, and Claude Rollin, Corbeil Essonne, both of France, assignors to Rhone-Poulenc Industries, Courbevoie, France

Filed Nov. 18, 1980, Ser. No. 207,905
Claims priority, application France, Nov. 29, 1979, 79 29360
Int. Cl.³ C13D *3/14, 3/02, 3/18*
U.S. Cl. 127—46.2 **11 Claims**

1. A process of purifying sugar beet juices by means of ion exchangers, which process comprises contacting sugar beet juices with at least two ion exchangers having an exchange capacity of less than about 2 meq/g., formed of a porous mineral support having a particle size of about 50 μm to 5 mm., a specific surface of about 5 to 600 $m^2/g.$, a pore diameter of about 60 to 2000 Å, and a pore volume of about 0.4 to 2 ml/g., covered with an amount of less than about 15 mg/m^2 of a film of cross-linked polymer having quaternary ammonium salt groups in the case of at least one of the ion exchangers and sulfonic groups in the case of at least one of the other ion exchangers.

4,331,484

ENERGY SAVING DISHWASHING METHOD WITH HEATER CONTROL

William F. Helwig, Jr., 6731 Briargate, Downers Grove, Ill. 60516

Division of Ser. No. 77,135, Sep. 19, 1979, Pat. No. 4,254,788. This application Nov. 17, 1980, Ser. No. 207,725
Int. Cl.³ B08B *3/10*
U.S. Cl. 134—18 **1 Claim**

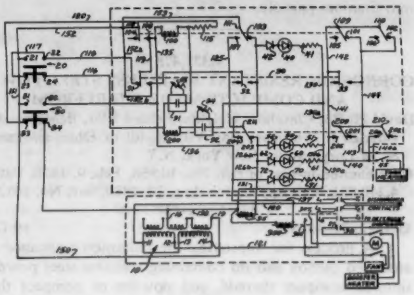
1. A method of conserving energy during the operation of a dishwasher machine, comprising the steps of

supplying electrical power to a dishwasher machine having a booster heater and a tank heater for commencing an operative cycle of the machine,

controlling the supply of electrical power to the dishwasher machine to activate the tank heater and to prevent simultaneous activation of the booster heater,

interrupting the supply of electrical power to the tank heater at the start of a washing cycle of the operative cycle of the dishwasher machine,

controlling the supply of electrical power to the booster heater simultaneous with the interruption of electrical power to the tank heater to activate the booster heater and to prevent simultaneous activation of tank heater, and



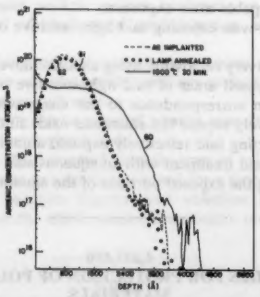
interrupting the electrical power supplied to the dishwasher after a predetermined time interval after the commencement of said operative cycle.

4,331,485

METHOD FOR HEAT TREATING SEMICONDUCTOR MATERIAL USING HIGH INTENSITY CW LAMPS

Arnon Gat, 1875 Newell Rd., Palo Alto, Calif. 94303

Filed Mar. 3, 1980, Ser. No. 126,458
Int. Cl.³ H01L *21/26, 21/265*
U.S. Cl. 148—1.5 **6 Claims**



1. A method of heat treating a semiconductor body at a high temperature for a short duration comprising the steps of

preheating said semiconductor body to a first temperature, and

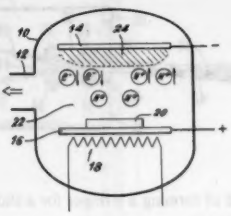
radiating a surface of said semiconductor body with a high intensity CW lamp thereby rapidly heating said radiated surface to a second temperature higher than said first temperature for a short duration of time.

4,331,486

PROCESS FOR TREATING SEMICONDUCTOR DEVICES UNDER ATOMIC HYDROGEN PLASMA

Andre Chenevas-Paule, Grenoble; Vincent Le Goascoz, Claix, and Pierre Viktorovitch, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 2, 1980, Ser. No. 164,544
Claims priority, application France, Jul. 6, 1979, 79 17598
Int. Cl.³ H01L 21/263
U.S. Cl. 148—1.5 11 Claims



1. A process for treating semiconductor devices comprising the steps of producing a hydrogen plasma in the vicinity of said devices, and further the step of removing the positively polarized particles of the plasma from said devices.

4,331,487

CONDUCTIVE COATINGS FOR METAL SUBSTRATES

Michael J. Mirra, and Albert H. Giles, both of Greeneville, Tenn., assignors to Ball Corporation, Muncie, Ind.

Filed May 6, 1980, Ser. No. 147,004
Int. Cl.³ C23F 7/00, 7/08
U.S. Cl. 148—6.15 R 3 Claims

1. A method of producing a preparatory coating on zinc-base surfaces comprising contacting said surfaces with a solution containing 0.1 to 2.5 weight percent salt selected from the group consisting of iron nitrate, nickel nitrate and copper nitrate, 0.01 to 3.5 weight percent of an oxidizing agent selected from the group consisting of perborates, peroxides, persulfates and perchlorates, 2 to 20 weight percent of a mineral acid selected from the group consisting of sulfuric acid and phosphoric acid and the remainder water, drying the contacted surface and thereafter applying an electrically conductive coating thereon.

4,331,488

COLD-ROLLED ULTRA LOW CARBON STEEL SHEET WITH IMPROVED PRESS-FORMING PROPERTIES

Masatoshi Sudo, and Ichiro Tsukatani, both of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Oct. 20, 1980, Ser. No. 198,840
Claims priority, application Japan, Oct. 18, 1979, 54-134809
Int. Cl.³ C22C 38/28
U.S. Cl. 148—36 2 Claims

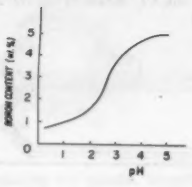
1. A cold-rolled ultra low carbon steel sheet with improved press-forming properties, characterized in that said sheet contains 0.002–0.015% of C., less than 0.006% of N, less than 0.01% of O, less than 0.02% of S, 0.1–0.35% of Mn, 0.01–0.06% of acid-soluble Al, 0.02–0.15% of Ti, 0.05–0.4% of Cr, and one or both of 0.001–0.1% of a rare earth element and 0.001–0.01% of B, and has a value of less than 0.8 for the atomic ratio (Ti*/(C+N)) of the total titanium content except titanium of oxide form (Ti*) to the sum of carbon and nitrogen contents, with the balance Fe and incidental impurities, wherein said steel sheet has an aging index of no more than 4.5 kg/mm².

4,331,489

PROCESS FOR PRODUCING MAGNETIC POWDER

Tatsuo Uehori; Akio Watanabe, and Tosiaki Ide, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,718
Claims priority, application Japan, Nov. 28, 1979, 54-152915
Int. Cl.³ H01F 1/02
U.S. Cl. 148—105 3 Claims



1. In a process for producing a metallic magnetic powder of decreased boron content by mixing an aqueous solution of a metal salt with an aqueous solution of a reducing agent comprising sodium boron hydride in a magnetic field to reduce said metal salt to continuously form a metallic magnetic powder and heat-treating said metallic magnetic powder in a non-oxidative atmosphere, the improvement characterized in that said aqueous solution of a metal salt is mixed with said aqueous solution of fluid reducing agent in a magnetic field to continuously discharge a reaction mixture containing a metallic magnetic powder having a pH of 2.5 or lower, and said reaction mixture containing said metallic magnetic powder is immediately continuously washed and filtered and said metallic magnetic powder is heat-treated in said non-oxidative atmosphere.

4,331,490

AMMONIUM NITRATE SLURRY COMPOSITIONS

Derek A. Palgrave, Doncaster; Frederick A. Waite, Farnham Common; James D. Birchall, Chester, all of England; John Cooper, and James A. Enever, both of Kilmarnock, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 44,161, May 31, 1979, Pat. No. 4,265,406.
This application Jan. 22, 1981, Ser. No. 227,413
Claims priority, application United Kingdom, Mar. 30, 1979, 7911207
Int. Cl.³ C06B 31/28
U.S. Cl. 149—46 16 Claims

1. A slurry explosive composition based essentially on ammonium nitrate, prepared by a process which comprises comminuting solid substance containing ammonium nitrate by grinding in the presence of a saturated solution of solid in a liquid in which the solid has a solubility greater than 1% by weight, the mixture of the solution and the solid being in fluid condition with the solid being a separate phase during grinding and the solution having dissolved therein an additive which is a crystal growth inhibitor for the solid whereby crystal growth is inhibited at both existing crystal surfaces and new crystal surfaces created by the breaking down of relatively coarse particles.

4,331,491

METHOD OF MAKING PACKAGING USING A TINTED ADHESIVE LAMINATE

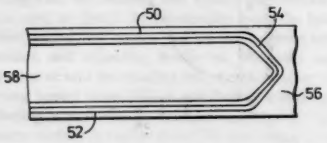
Peter M. Shaw, Whitehaven, and Andrew F. Noble, Workington, both of England, assignors to Smith Brothers (Whitehaven) Limited, England

Filed May 5, 1980, Ser. No. 146,718

Claims priority, application United Kingdom, Feb. 29, 1980, 8006950

Int. Cl.³ B32B *31/08, 31/20*

U.S. Cl. 156—64 9 Claims



1. A method of making packaging for medical or pharmaceutical products, including forming a tinted laminated plastics sheet by bonding together two substantially transparent plastics films and sealing the sheet in selected areas to a second sheet to form a container for the product, wherein the films are bonded together by a tinted adhesive.

4,331,492

METHOD OF MAKING A SOLAR PANEL

Ramon Dominguez, Rockville, and Jack R. Anderson, Gaithersburg, both of Md., assignors to Solarex Corporation, Rockville, Md.

Filed Oct. 17, 1979, Ser. No. 85,593

Int. Cl.³ H01L *31/18*

U.S. Cl. 156—66 2 Claims

1. A method of forming a solar panel for maintaining a plurality of photovoltaic cells in interconnected relationship and in position to receive light impinging thereon and convert light energy into electrical energy, comprising,

providing a tray within which said cells are to be retained, said tray including a base member,

mounting electrically conductive clips on said base member in spaced relationship to enable adjacent clips to accommodate cells between them,

inserting at least one cell between each pair of adjoining clips so that, through one of said clips, electrical contact is effected between the top surface or bottom surface electrode of one cell and the bottom surface or top surface electrode of the next adjacent cell held by said clip,

overlying said cells and said clips with a liquid encapsulant having optical properties enabling quantities of light to pass therethrough, and

curing the encapsulant to a firm state whereby said cells are maintained in light-receiving position while being cushioned and protected from ambient conditions by said encapsulant.

4,331,493

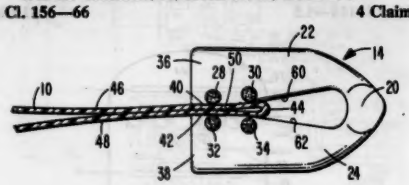
METHOD OF MANUFACTURING WELDED THERMOPLASTIC STRINGER

Charles T. Lawrence, Saegertown, Pa., assignor to Talon, Inc., Meadville, Pa.

Continuation of Ser. No. 28,941, Apr. 11, 1979, abandoned, which is a division of Ser. No. 826,543, Aug. 22, 1977, Pat. No. 4,186,467. This application Sep. 4, 1980, Ser. No. 183,884

Int. Cl.³ A41H *37/00;* A44B *19/00;* D05B *3/14*

U.S. Cl. 156—66 4 Claims



1. A method of forming a stringer for a slide fastener comprising the steps of

folding a polymer film strip along a longitudinal fold line extending obliquely to a molecular orientation of the polymer film to form a tape having overlying folded portions which have mutually crossing molecular orientations,

forming a train of thermoplastic coupling elements each with a head portion and a pair of leg portions extending in generally the same direction from opposite sides of the head portion,

said forming including the forming of inside surfaces of the leg portions so that said inside surfaces diverge from heel portions of the leg portions toward the head portions,

positioning one longitudinal edge of the tape between each pair of leg portions of the coupling elements so that the one edge is positioned intermediate the heel portions and the head portions,

welding the heel portions of each coupling element to the respective opposite sides of the tape so that a portion of the tape adjacent the one edge of the tape between the leg portions remains spaced from and unaffected by the welding, and

said welding also including welding the overlying folded portions of the tape together at the location of the welds between the heel portions and the tape leaving portions between adjacent coupling elements free of welds.

4,331,494

SOLAR PANEL AND METHOD OF MANUFACTURING A SOLAR PANEL

Jacques Duchateau, Recouignies, and Maurice Nicolas, Maurepas, both of France, assignors to BFG Glassgroup, Paris, France

Continuation of Ser. No. 915,124, Jun. 13, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,487

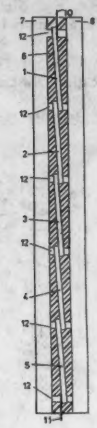
Claims priority, application United Kingdom, Jun. 16, 1977, 25267/77

Int. Cl.³ B32B *31/00;* H01L *23/30, 31/18*

U.S. Cl. 156—87 12 Claims

1. A method of manufacturing a solar panel including at least one solar energy transducer laminated between a transparent vitreous sheet and a second sheet, which comprises the steps of effecting said lamination with a fluid medium which comprises an acrylic compound which polymerizes at low temperature without substantial change in volume and polymerizing said fluid medium in situ at a temperature below 60° C. to form a

transparent polymeric layer in which said transducer is imbedded and which serves to bond said sheets together, said fluid medium comprising a mixture of methyl methacrylate resin and polyurethane prepolymer as main constituent.

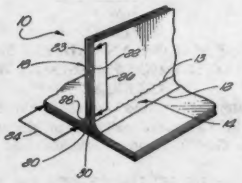


4,331,495

METHOD OF FABRICATING A REINFORCED COMPOSITE STRUCTURE

Leslie M. Lackman, Tarzana, and John A. Hill, Lawndale, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 870,684, Jan. 19, 1978, Pat. No. 4,256,790.
This application Feb. 27, 1981, Ser. No. 238,716
Int. Cl.³ B32B 7/08
U.S. Cl. 156—93 8 Claims



1. A method of forming a reinforced composite structure which comprises:

staging a first composite panel and a second composite panel, each of said panels having a plurality of fiber composite plies, said plies being adhesively bonded together;

joining said first panel to said second panel by sewing a series of stitches of uncured flexible composite thread through said first panel and said second panel;

co-curing said panels and said thread as joined.

4,331,496

BEARING ASSEMBLY AND METHOD FOR MAKING SAME

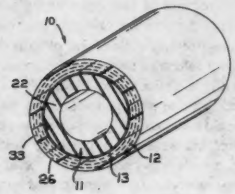
Roy L. Orndorff, Jr., Kent, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 10, 1980, Ser. No. 129,159
Int. Cl.³ B65H 8/00
U.S. Cl. 156—187 9 Claims

1. A method of manufacturing a non-metallic bearing having a fiber reinforced elastomeric inner bearing portion and a fiber reinforced plastic outer portion, said method comprising the steps of:

preforming a generally cylindrical fiber reinforced elastomeric bearing blank;

mounting the bearing blank on a rotatable spindle;



simultaneously rotating the spindle, wrapping a fiber fabric onto the outer circumference of the bearing blank, and impregnating the fiber fabric with a plastic resin; and

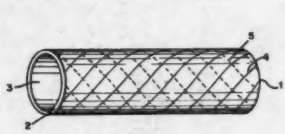
curing said resin at room temperature to complete the fiber reinforced plastic shell.

4,331,497

COMPOSITE SHELL

John J. Gilman, Morristown, and Ralph R. Saunders, Lafayette, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 70,207, Aug. 27, 1979, Pat. No. 4,258,756.
This application Dec. 1, 1980, Ser. No. 211,492
Int. Cl.³ B65H 81/00
U.S. Cl. 156—195 5 Claims



1. A method for making a composite thin-walled shell, comprising the steps of:

(a) helically wrapping a plurality of layers of glassy alloy strip about an axis of concentricity to form a plurality of substantially orthogonally wrapped layers, each of the layers having a high transverse aspect ratio, adjacent layers having alternating directions of wraps and the ratio of the inner radius to the combined thickness of the layers being at least about 10;

b. applying bonding material between said layers to provide a joining shear strength between said layers and said strip within each layer at least about equal to the tensile strength of the glassy alloy strip divided by the transverse aspect ratio.

4,331,498

METHOD OF AND APPARATUS FOR WRAPPING TOPS OF BOTTLES WITH FOIL

Roger Pagay, Lyons, and Georges Tavernier, Villevrbanne, both of France, assignors to Societe Nouvelle Baele-Gangloff Societe Anonyme, Villeurbanne, France

Filed May 2, 1980, Ser. No. 146,329
Claims priority, application France, May 3, 1979, 79 11807
Int. Cl.³ B32B 35/00
U.S. Cl. 156—256 14 Claims

1. An apparatus for making foil blanks from an elongated band on a roll and for applying said blanks to objects, said apparatus comprising:

a pair of upstream rollers gripping said band;

drive means connected to said upstream rollers for rotating

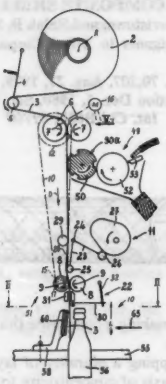
same at a constant peripheral speed and thereby pulling said band off said roll at said speed and advancing said band downstream along a band path;

means including a glue-applying roller downstream of said upstream rollers for applying adhesive to one face of said band in spots spaced apart on said one face transverse to the travel direction of said band along said band path;

a pair of downstream rollers gripping said band downstream of said glue-applying roller, one of said downstream rollers engaging said one face only between said spots;

means including a deflector engageable with said band between said glue-applying roller and said downstream rollers on said one face only between said spots for periodically deflecting said band between said upstream and downstream rollers perpendicular to said travel direction and thereby periodically stopping said band at said downstream rollers;

means including a slip clutch between said downstream rollers and said drive means for urging said downstream rollers into rotation at a peripheral speed substantially



greater than that of said upstream rollers and for permitting said downstream rollers to stop rotating completely when said band stops at said downstream rollers;

means including a cutter operable synchronously with said deflector and downstream of said downstream rollers for cutting through said band when same stops at said downstream rollers, and thereby forming a blank;

means operating synchronously with said cutter and deflector for conveying said objects through a station on said band path immediately downstream of said downstream rollers along an object path passing transversely through said band path at said station with one object being positioned in said station each time said band stops thereat;

means including a holder engageable with the blank in said station and therethrough with the object therein for pressing said blank against said object when said band stops and said cutter cuts through said band; and

means along said object path downstream of said station for wrapping said blank tightly around said object as same is transported away from said station.

4,331,499

METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF CYLINDRICAL TUBES

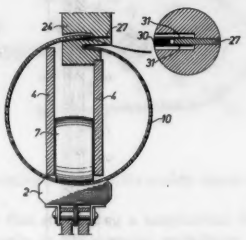
Finn T. Madsen, Birkeröd, and Steffen Kjaerbye-Petersen, Farum, both of Denmark, assignors to Tetra Pak Developpement SA

Filed Jul. 25, 1980, Ser. No. 172,705

Claims priority, application Switzerland, Jul. 26, 1979, 6936/79

Int. Cl.³ B29D 23/10

U.S. Cl. 156—304.5 10 Claims



1. A method for joining edge zones of webs or sheets of heat-sealable plastic material, comprising the steps of moving edge zones of at least one web or sheet toward one another while simultaneously moving the at least one web or sheet in a longitudinal direction of said edge zones, guiding one edge zone of the at least one web or sheet past a cutter device, removing a central portion of the one edge zone to form two edge lugs, folding back one of the edge lugs formed in the cutting, fitting the other, uncut edge zone into the central portion of the cut edge zone of the web or sheet, returning the edge lug folded away to is original position to form a joining zone, supplying heat to the joining zone comprising the two combined edge zones, compressing the joining zone to melt the surfaces together, whereby a tight and mechanically durable joint is obtained.

4,331,500

METHOD OF MAKING AN ENDLESS BELT FOR CONTINUOUSLY HOT PRESSING A WEB OF MATERIAL

Rolf Gersbeck, Ronnenberg, and Manfred Krohn, Hanover, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 107,567, Dec. 27, 1979, Pat. No. 4,269,585. This application Sep. 11, 1980, Ser. No. 186,180

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856646

Int. Cl.³ C09J 7/00

U.S. Cl. 156—307.7 1 Claim

1. A method of making an endless pressure belt comprising a fabric of steel wires and a resilient covering layer for use in apparatus for continuously hot pressing a web of material, said method comprising the steps of

(1) superimposing and pressing together said fabric of steel wires and a layer of butyl rubber with an adhesive be-

tween said fabric of steel wires and said layer of butyl rubber,

(2) coating with an adhesive the exposed surfaces of at least one of said layer of butyl rubber and a textile layer,

(3) pressing said layer of butyl rubber and said textile layer together, thereby bonding the combination of said fabric of steel wires, said butyl rubber layer and said textile layer by the action of heat and pressure, with simultaneous vulcanisation of said butyl rubber layer,

(4) coating with adhesive the exposed surface of at least one of said textile layer and a silicon rubber layer, and

(5) applying heat and pressure to secure said silicon rubber layer to said textile layer with simultaneous vulcanisation of said silicon rubber layer; said butyl rubber layer, said textile layer and said silicon rubber layer together forming said resilient covering layer.

4,331,501

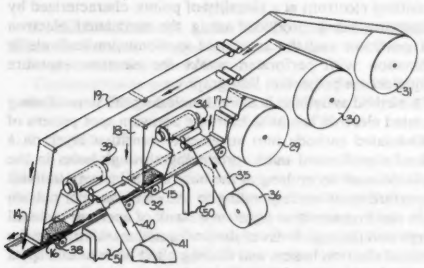
APPARATUS AND PROCESS FOR SUCCESSIVELY FABRICATING DISPOSABLE DIAPERS HAVING MULTI-LAYER INTERIOR ABSORBENT PADS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Filed Jun. 6, 1979, Ser. No. 46,114

Int. Cl.³ B32B *31/00, 31/04, 5/00, 29/02*

U.S. Cl. 156—383 **6 Claims**



1. An apparatus for successively fabricating disposable diapers, which include a fluid-permeable top cover sheet, a multi-layer fluid-absorbent interior pad positioned under the top cover sheet, and a fluid-impervious bottom cover sheet positioned under the interior pad and secured to the top cover sheet along longitudinal and transverse edges thereon, said apparatus comprising:

feeding means for moving components of the diapers in a generally longitudinal path of travel through said apparatus during fabrication of the disposable diapers;

means for producing spaced-apart multi-layer interior absorbent pads while the pads are being moved in the generally longitudinal path of travel including means for supplying and positioning a first sheet of crepe tissue for longitudinal travel through said apparatus by said feeding means, first means for fiberizing a first wet-pressed cellulosic fiber sheet and for air-laying the fiberized fibers into a bottom layer on top of the first sheet of crepe tissue, means for supplying and positioning a second sheet of crepe tissue on top of the bottom layer of fiberized fibers for longitudinal travel through said apparatus by said feeding means, second means for fiberizing a second wet-pressed cellulosic fiber sheet and for air-laying the fiberized fibers into a top layer in superimposed position on the bottom layer and on top of the second sheet of crepe tissue, and means for supplying and positioning a third sheet of crepe tissue on top of the top layer of fiberized fibers for stabilizing the layers of fiberized fibers and for forming multi-layer pads as the pads are being moved in their generally longitudinal path of travel;

means for supplying and positioning a continuous fluid-permeable top cover sheet which is somewhat wider than the interior pads in superimposed relationship on top of the interior pads as they are being moved in their longitudinal path of travel including means for applying adhesive to the top cover sheet along longitudinal edges thereof and at spaced locations transversely across the top cover sheet for positioning between spaced-apart interior pads;

means for supplying and positioning a continuous fluid-impervious bottom cover sheet of generally the same width as the top cover sheet under the interior pads in longitudinal edge alignment with the top cover sheet;

means for pressing the longitudinal edges and transverse sections of the top cover sheet and bottom cover sheet between the spaced-apart interior pads together with each other for adhesively securing these areas together with the adhesive applied to the top cover sheet for forming a series of interconnected disposable diapers as they are being moved in the longitudinal path of travel; and

severing means for intermittently transversely severing the interconnected disposable diapers transversely across the areas between spaced-apart interior pads for forming individual disposable diapers.

4,331,502

APPARATUS FOR MAKING BAGS FROM A TWO-PLY WEB OF THERMOPLASTIC MATERIAL

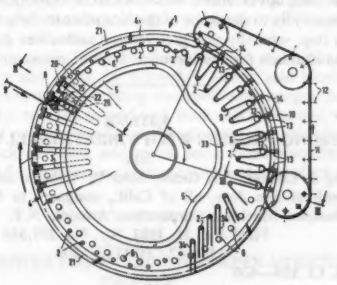
Fritz Achelpohl, and Friedhelm Mundus, both of Lengerich, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,685

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931268

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—515 **5 Claims**



1. Apparatus for making bags or tube sections from a two-ply continuously supplied web of heat-sealable or weldable material, comprising a rotatable cylinder, parallel, spaced apart backing rods carried by the cylinder and serving to support the continuously supplied web, and a transverse welding and severing device having back-pressure bars carried by the cylinder, and welding bars spaced from the cylinder, the back-pressure bars being extensible to engage and cooperate with the welding bars, the backing rods and the back-pressure bars being movable from and toward each other to cause the web to extend between them in a zig-zag line and being provided with means for guiding the web with low friction, and those welding bars which are disposed near that sector of the cylinder in which the backing rods are disposed when they are retracted and in which the welding seams to be separated are made being moved concentrically to and at the same angular velocity as the back-pressure bars outside that surface of the cylinder over which the back-pressure bars are disposed, characterized in that the back-pressure bars consist of rotatably mounted rolls, which are encompassed with a covering of elastic material which resists the welding heat, said rolls guiding the web with

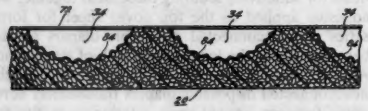
low friction and being rotated by passage of the web so that the entire periphery of each roll is used as an abutment thereby providing uniform stress of the roll covering, and the welding bars have knife edge-like welding edges facing the rolls.

4,331,503

MANUFACTURE OF SOLAR COLLECTOR PANELS

Charles M. Benjamin, 1522 Kirkwood Blvd., Davenport, Iowa 52803

Filed Aug. 6, 1979, Ser. No. 64,216
Int. Cl.³ B29C *17/08*; F24J *3/02*
U.S. Cl. 156—633 6 Claims



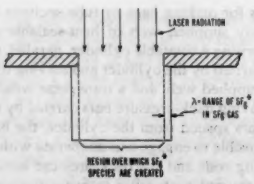
1. The method of making a solar collector panel comprising the steps of providing a solidified sheet of foam material, forming on the face of said sheet a predetermined pattern of grooves sufficiently deep and wide to accommodate the turbulent flow of a supply of warm air for a portion of a building, in which the groove formation step is characterized by the application of a quantity of solvent to one face of the foam sheet in said predetermined pattern and the formation, by the action of the solvent, of irregular open pockets in the surfaces of said grooves, said open pockets being larger than the cells of the foam material, causing the surfaces of the grooves exposed by the action of the solvent to have a light-absorbing color, and securing a light-transmitting cover sheet to the remaining portions of said face, said cover sheet, when secured, conforming in shape substantially to the shape of the face prior to the groove formation step, whereby said grooves and said cover sheet together form channels for the turbulent flow of warm air.

4,331,504

ETCHING PROCESS WITH VIBRATIONALLY EXCITED SF_6

Tung J. Chuang, Los Gatos; John W. Coburn, and Eric Kay, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,364
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—635 8 Claims



1. In a process for etching a substrate which forms a volatile fluoride and achieving directionality by the steps of:

(1) selectively covering portions of the substrate with a non-erodible mask containing openings;

(2) contacting the uncovered portions of the substrate with SF_6, and

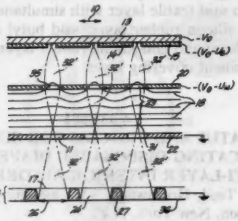
(3) vibrationally exciting the SF_6 by exposing it to irradiation with laser light, the improvement characterized in that the openings in said mask are smaller than the diffraction limit of the laser light.

4,331,505

METHOD FOR MANUFACTURING AN ELECTRON BEAM EMISSION APERTURE

Alfred Hirt, Munich, Fed. Rep. of Germany, assignor to Man Maschinenfabrik Augsburg-Nurnburg A.G., Munich, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,948
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020809
Int. Cl.³ B05D *3/06*
U.S. Cl. 156—643 2 Claims



1. A method of manufacturing an electron emission aperture of an electron beam generator, the generator having a cathode for emitting electrons at a plurality of points, characterized by the aperture being produced using the associated electron beam generator and the associated spot-emission cathode in combination with perforated masks for electron exposure during electron projection lithography.

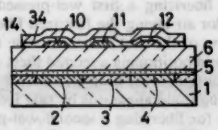
2. A method as defined in claim 1 including the steps of using associated electron beams to burn the emission spot pattern of the associated cathode into an electron-sensitive layer on a blank of a perforated mask, producing through-holes in the perforated mask by etching at the burn spots, burning individual aperture spots corresponding to the emission spot pattern into an electron-sensitive layer on a blank of aperture material through said through-holes of the perforated mask utilizing the associated electron beams, and etching blind holes at said spots allowing the thin film of the individual apertures and a supporting grid to remain.

4,331,506

METHOD OF MANUFACTURING TARGET OF IMAGE PICKUP TUBE

Akira Sasano; Toshio Nakano, both of Hinodemachi; Ken Tsutsui, Hachioji; Chushiro Kusano, Kokubunji; Tadaaki Hirai, Koganei, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 8,835, Feb. 2, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,213
Claims priority, application Japan, Feb. 17, 1978, 53/16482
Int. Cl.³ H01J *31/26*
U.S. Cl. 156—633 6 Claims



1. A method of manufacturing a target of an image pickup tube comprising the steps of:

(a) forming a plurality of groups of transparent conductive signal electrodes on a transparent insulating base plate including the image area thereof,

(b) forming a protective layer on substantially said image area of said base plate,

said protective layer being substantially unsoluble in an etching liquid by which a portion of an insulating layer constituting an intermediate layer of insulation may be etched away,

(c) forming said insulating layer constituting said intermediate layer of insulation on the protective layer and on at least the portion of the signal electrodes serving as connection part between the signal electrodes and a location at which bus bars are to be applied, said layer being selectively removed from said image area by the etching liquid,

(d) removing said protective layer,

(e) mounting bus bars each electrically connected to corresponding transparent conductive signal electrodes via said connecting part and insulated from the remaining transparent conductive signal electrodes by an interposed intermediate isolation layer formed in said step (c), and

(f) forming a photoconductive layer on at least a plurality of groups of transparent conductive signal electrodes in said image area.

4. A method of claim 1, characterized in that after the method step (e) color filters are provided on a face of said transparent insulating base plate which does not have any bus bars thereon, and a leak resistive layer is formed over said plurality of groups of the transparent conductive signal electrodes and that in method step (f) the photoconductive layer is produced on said leak resistive layer.

4,331,507

DESILICATION IN ALKALINE PULP PROCESSES

Elliot J. Roberts, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 101,468, Dec. 10, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,700

Int. Cl.³ D21C *11/04, 11/10*

U.S. Cl. 162—29 **4 Claims**

1. A process for desilicating a silica-contaminated pulp liquor produced in the alkaline pulping process, said alkaline pulping process including the steps of digesting cellulosic fiber material with a sodium hydroxide-containing white liquor, separating the resulting black liquor from the pulp, concentrating the black liquor in multi-effect evaporators, combusting the concentrated black liquor to yield black ash, smelt or pellets and treating the black ash, smelt or pellets to recover sodium hydroxide in the form of white liquor which is recycled for the digestion step; the improvement comprising introducing bauxite ore into the black liquor to produce the intermediate compound sodium aluminate for reaction with the silica in the black liquor to form a sodalite precipitate, separating the sodalite precipitate and removing said precipitate from the process stream.

4,331,508

PHOTOGRAPHIC SUPPORT

Masao Miyama, and You Kusama, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 111,297, Jan. 11, 1980, Pat. No. 4,288,287. This application Jul. 6, 1981, Ser. No. 280,351

Claims priority, application Japan, Jan. 16, 1979, 54-3572; Jan. 20, 1979, 54-5690

Int. Cl.³ D21H *1/34*

U.S. Cl. 162—135 **7 Claims**

1. A photographic support which comprises a paper made from woodpulp fibers and containing a sizing agent and a strength reinforcing agent, and a polyethylene resin coated thereon, the bone dry weight ratio of said strength reinforcing agent to said sizing agent being 1.8–4.0 to 1 and the amount of the sizing agent being 0.3–1.0% by weight of the woodpulp fibers, wherein said polyethylene resin coated on the back side of the paper contains 35–80% by weight of low-density polyethylene, wherein the paper stock contains polyvinyl alcohol fibers in an amount of 5–20% of the oven-dry weight based on the woodpulp fibers, said polyvinyl alcohol fibers maintaining a fibrous shape and adhering to the woodpulp fibers and wherein the woodpulp fibers constituting the paper stock have fractionation characteristics in accordance with the fractionation method specified in JISP8207 such that 5–40% is retained by the first wire sieve cloth having a sieve opening of 710 μm and more than 35% is retained by the second wire sieve cloth having a sieve opening of 350 μm.

4,331,509

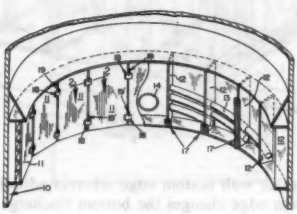
DIGESTER STRAINER LOCKING ASSEMBLY

John F. Oettinger, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Jul. 7, 1980, Ser. No. 166,371

Int. Cl.³ D21C *7/00;* **E04C** *1/40*

U.S. Cl. 162—251 **1 Claim**



1. A digester strainer locking assembly for releasably supporting perimetrically related strainer panels mounted interiorly of a digester comprising:

a member containing a socket fixed to the digester interior and having horizontally-spaced apart, vertically extending ways for the receipt of said panels, said socket having a recess between said ways,

a block wedgingly mounted in said recess and equipped with horizontally extending, integral wings for overlying and clamping said panels, and

a lock also wedgingly mounted in said recess and resiliently engaging said block for releasably seating said block in said recess, said lock being equipped with integral head means for removal of said lock from said recess and with a pair of resilient legs for wedgingly engaging said socket and block members, said recess being flared inwardly to provide for wedging engagement with both said block and lock.

4,331,510

STEAM SHOWER FOR IMPROVING PAPER MOISTURE PROFILE

Roger Wells, Mercer Island, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 964,322, Nov. 29, 1978, Pat. No. 4,249,992. This application Sep. 8, 1980, Ser. No. 185,049

Int. Cl.³ D21F *1/80, 5/14, 5/18*

U.S. Cl. 162—290 **5 Claims**

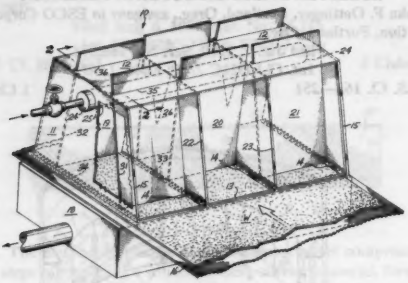
1. In a steam hood of the type wherein said hood, positioned over a wet fibrous web traveling on a supporting wire across a suction box, blankets said web across it width with steam, said steam being drawn into the web condensing therein and thereby causing the temperature of the water content of the web to increase resulting in increased removal of said water content by said suction box proportional to the amount of steam absorbed by the web, wherein the improvement, permitting control of web moisture profile across its width, comprises:

internal wall means for dividing said hood into a plurality of substantially rectangular compartments across the width of the machine, said compartments substantially open at the top to admit steam from a supplier means and open at the bottom to discharge steam onto said web,

each compartment having at least one cross machine direc-

tion wall that pivots about a cross machine direction axis at its upper portion and with a bottom edge that is adjustable in position with respect to the bottom edge of an opposite cross machine direction wall of said compartment; and

means for securing in position, and for adjusting in the machine direction each said compartment cross machine



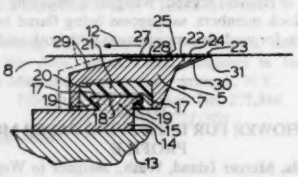
direction wall bottom edge wherein adjusting said wall bottom edge changes the bottom discharge area of said compartment thereby adjusting the amount of steam which impinges upon and is absorbed by the web as it passes adjacent said compartment wherein water removal is proportional to the discharge area of said adjacent compartment through which said steam is flowing.

4,331,511

PAPER MAKING MACHINE FOIL HAVING LOW DISTURBANCE PROFILE AND SELF-SHARPENING TIP

Denis A. Goddard, and Robert L. Wallis, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed May 9, 1980, Ser. No. 148,368
Int. Cl.³ D21F *1/54, 7/00*
U.S. Cl. 162—352 **8 Claims**



1. A paper making machine foil having an elongate body having means adapting the body to be mounted in cross machine direction under a travelling forming wire for promoting water removal from paper stock carried by the wire, said foil comprising:

a narrow angle forwardly projecting doctoring nose extending along said body and terminating in a leading water skimming edge arranged to project opposite to the direction of travel of said forming wire;

said nose having an upper surface comprising part of a wire supporting land surface on top of said body;

a layer of wear resisting material within the plane of said land surface, said layer having a leading boundary spaced from said skimming edge so that at least an area of said upper surface of said nose intervening between said edge and said leading boundary exposes material of said body to the bottom surface of said wire;

a negative pressure inducing surface on said body sloping downwardly away from said land surface rearwardly relative to the trailing boundary of said wear resisting material layer;

and a wear resisting facing on and along an under surface of said nose and extending in width from said skimming edge obliquely downwardly and rearwardly, and wherein the angle between said top surface of said nose and said under surface of said nose is about 14° to 23°,

said wear resisting facing being substantialy harder than said material of said body and having an upper edge portion providing a wear resistant water stripping, sharp tip for said skimming edge said tip being self-sharpening and located substantially in the plane of said top surface of said nose, said wear resisting face being of substantially constant thickness along the under surface of said nose and said thickness being substantially less than the width of the downwardly and rearwardly extending land surface, and wherein said upper edge portion of said facing has a chamfer from said tip and lying in substantially the plane of said top surface of said nose;

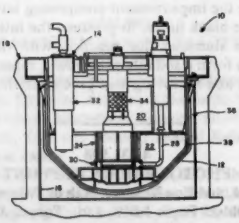
said upper surface area by virtue of being a softer material than said upper edge portion of said facing facilitating self-sharpening of said tip by action of the bottom surface of the travelling wire.

4,331,512

NUCLEAR REACTOR GUARD VESSEL ARRANGEMENT

Joseph V. Facha, Reseda, Calif., and John P. Cook, Chattanooga, Tenn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 23, 1979, Ser. No. 32,285
Int. Cl.³ G21C *13/00*
U.S. Cl. 376—287 **10 Claims**

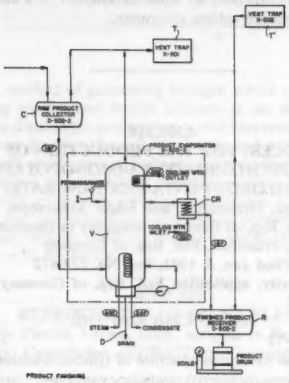


1. In a nuclear reactor including a vertically extending reactor vessel containing a number of reactor components and located within a cavity defined by the vertically extending, circumferential cavity wall assembly, the improvement comprising a guard vessel arrangement including a guard vessel located around and spaced from said reactor vessel between the latter and said cavity wall assembly and means in the shape of an inverted frustum having a circumferential bottom end, a larger circumferential top end and an upwardly and outwardly extending, substantially solid main body disposed between and connected with said circumferential ends, said frustum being located within and extending entirely around said cavity between said guard vessel and said cavity wall assembly and having said top and bottom ends fixedly connected to said wall assembly and guard vessel, respectively for fixedly supporting the latter in place.

4,331,513
APPARATUS FOR PURIFYING A VAPORIZABLE LIQUID

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, Washington, D.C.

Continuation of Ser. No. 823,677, Aug. 11, 1979, abandoned, which is a continuation of Ser. No. 590,071, Jun. 25, 1975, abandoned, which is a division of Ser. No. 497,451, Aug. 14, 1974, Pat. No. 4,008,046, which is a division of Ser. No. 126,623, Mar. 22, 1971, Pat. No. 3,872,223. This application Jan. 11, 1980, Ser. No. 111,229
Int. Cl.³ B01D 3/26
U.S. Cl. 202—158 4 Claims



1. Apparatus for purifying impure vaporizable liquid which contains dissolved inorganic solids, including in combination:

(a) a closed vessel comprising

(1) a vapor producing lower section having a liquid inlet thereat, means connected to said inlet from an external source for introducing said impure vaporizable liquid thereinto, means for heating said impure liquid therein and producing vapor therefrom, and means for removing accumulated inorganic solids therefrom,

(2) a vapor condensing upper section including therein means for cooling and condensing said vapor to form condensate of said vaporizable liquid, and

(3) a vapor backwashing intermediate section in communication with said lower section and said upper section and comprising means for passing vapor from said vapor producing section upwardly through said intermediate section to said vapor condensing section and for passing condensate from said vapor condensing section downwardly in countercurrent contact with said upwardly passing vapor and to said vapor producing section, said intermediate section also comprising at a location more proximate to said upper section than to said lower section vapor outlet and withdrawal means for withdrawing a portion of said upwardly passing vapor which at said location has been purified by traversing a major part of said intermediate section in contact with backwashing condensate which has been formed from purified vapor in said upper section,

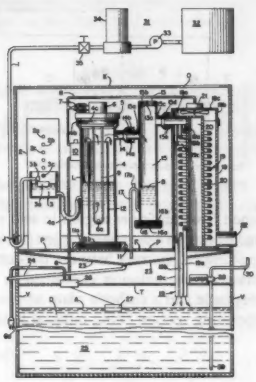
(b) said vapor outlet and withdrawal means comprising a conduit connected to said intermediate section at said more proximate location and means for cooling said conduit for condensing said withdrawn purified vapor therein, and

(c) means for collecting condensate of said vaporizable liquid formed from said purified vapor in said conduit.

4,331,514
STILL

Martin G. Bauer, Rte. 1, Box 15, Bismarck, N. Dak. 58501

Filed Aug. 12, 1980, Ser. No. 177,163
Int. Cl.³ B01D 3/02
U.S. Cl. 202—181 8 Claims



1. In a still for removing impurities from water, the still being of the type having a supporting frame, water heater means and a boiling chamber and a separator chamber which tend to be fouled by said impurities, a condenser chamber, and water inlet means operative to control the level of water in the boiling chamber, improved structure to facilitate knock-down of the still for cleaning, comprising:

a condenser chamber tube fixed upright to the frame and having an inlet;

a boiling chamber tube having a water entrance, an outlet, and a removable closure plug at each end, the boiling chamber tube being detachably supported upright by the frame, and the water heater means being carried by one of said plugs;

a separator chamber tube having a removable closure plug at each end and having laterally extending duct means, the duct means being telescopically receivable in the boiling chamber outlet and in the condenser chamber inlet and being disposed to support the separator chamber in upright position;

the boiling chamber tube and the separator chamber tube and the closure plugs and water heater means being separable from each other to facilitate cleaning; and

the water inlet means comprising a float valve tank located outside of and adjacent to the boiling chamber tube, a float valve in the tank coupled to admit water from a pressure source into said tank and to maintain it at a fixed level in the tank, flexible hose means coupling the tank to the boiling chamber water entrance, and adjustable height means carried by the frame and operative to support the tank relative to the boiling chamber at one of a plurality of selectable elevations to maintain a selected level of water in the boiling chamber.

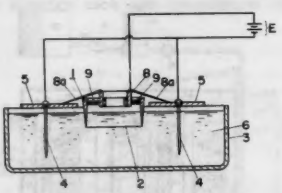
4,331,515
APPARATUS FOR RESHARPENING CUTTING TOOLS

Joichi Saitoh, Hotarugaike-higashi, Japan, assignor to Kitobuki Seihan Printing Co., Ltd., Osaka, Japan

Filed Nov. 12, 1980, Ser. No. 206,081
Claims priority, application Japan, Nov. 22, 1979, 54-151644; Jun. 9, 1980, 55-77531
Int. Cl.³ C25F 7/00
U.S. Cl. 204—228 5 Claims

1. An electropolishing apparatus for resharpening cutting tools, comprising an electrolytic solution receptacle, an aque-

ous solution of 90% by volume of phosphoric acid and 1% by volume of sulfuric acid in said receptacle, a top-opened box body for removably receiving said electrolytic solution receptacle, removable support rods bridging the space between opposed sides of said box body for suspending a cutting tool to



be resharpened from an upper region in said electrolytic solution receptacle, and an operating section having a DC power source for passing DC current between the cutting tool with its edge immersed in the solution contained in the electrolytic solution receptacle and a cathode plate immersed in said solution, said operating section being integral with said box body.

4,331,516

CURING OF TETRABASIC LEAD PASTED BATTERY ELECTRODES

Richard M. Meighan, Lansdale, Pa., assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 3, 1980, Ser. No. 212,648

Int. Cl.³ H01M *10/44*

U.S. Cl. 204—2.1 **5 Claims**

1. A process for the fabrication of lead acid batteries containing an acid electrolyte and negative electrodes and positive electrodes, including the steps of coating at least one said electrode with a paste containing tetrabasic lead sulfate and an effective amount of ammonium carbonate mixed with water, curing said electrode in a dry atmosphere, and forming said electrode.

4,331,517

METHOD OF PREPARING A CATHODE BY HIGH AND LOW TEMPERATURE ELECTROPLATING OF CATALYTIC AND SACRIFICIAL METALS, AND ELECTRODE PREPARED THEREBY

Thomas A. Rechlicz, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,499

Int. Cl.³ C25D *5/48*; C25B *11/06, 11/09*; C25D *3/56*

U.S. Cl. 204—35 R **28 Claims**

1. In a method of preparing a cathode comprising electrodepositing a catalytic metal and a sacrificial metal onto an electroconductive substrate by

(a) inserting the electroconductive substrate into an electroplating solution containing cations of the catalytic metal, cations of the sacrificial metal, and a plating anode, and

(b) passing an electrical current from the plating anode to the cathode whereby to electrodeposit metal on the electroconductive substrate; the improvement comprising commencing the electrodeposition at a first, elevated temperature whereby to preferentially electrodeposit catalytic metal onto the electroconductive substrate, cooling the electroplating solution, and thereafter continuing electroposition at a second, lower temperature whereby to codeposit catalytic metal and sacrificial metal.

4,331,518

BISMUTH COMPOSITION, METHOD OF ELECTROPLATING A TIN-BISMUTH ALLOY AND ELECTROPLATING BATH THEREFOR

Harold P. Wilson, Huron, Ohio, assignor to Vulcan Materials Company, Birmingham, Ala.

Filed Jan. 9, 1981, Ser. No. 223,713

Int. Cl.³ C25D *3/60*; C07F *9/94*

U.S. Cl. 204—43 S **23 Claims**

12. An aqueous acidic solution for plating a tin and bismuth-containing alloy onto a conductive substrate which solution comprises tin ions, free sulfuric acid and an acid chelate comprising bismuth sulfate gluconate.

19. A composition for use in the plating of a bismuth-containing alloy comprising an aqueous solution of a chelate salt comprising bismuth sulfate gluconate.

4,331,519

PROCESS FOR THE PRODUCTION OF ((MONO-TRICHLORO)-TETRA-(MONOPOTASSIUM-DICHLORO))-PENTA-ISOCYANURATE)

Michael Berger, Hemmerich, and Edgar Koberstein, Alzenau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 5, 1981, Ser. No. 222,672

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1980, 3000365

Int. Cl.³ C25B *3/10, 3/02*

U.S. Cl. 204—72 **17 Claims**

1. A process for the production of ((mono-trichloro)-tetra-(mono-potassium-dichloro))-penta-isocyanurate comprising carrying out the process electrolytically at an anode employing cyanuric chloride in an aqueous, potassium ion containing medium.

4,331,520

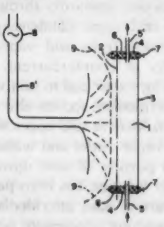
PROCESS FOR THE RECOVERY OF HYDROGEN-REDUCED METALS, IONS AND THE LIKE AT POROUS HYDROPHOBIC CATALYTIC BARRIERS

Walter Juda, Lexington; Robert J. Allen, Saugus, and Robert Lindstrom, Gloucester, all of Mass., assignors to Prototech Company, Newton, Mass.

Filed Oct. 26, 1979, Ser. No. 88,373

Int. Cl.³ C25C *1/10, 1/20*; C22B *15/12*; H01M *4/92*

U.S. Cl. 204—105 R **25 Claims**

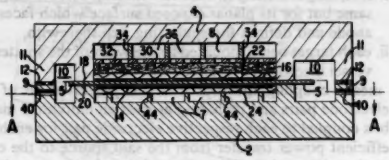


1. A process for recovering hydrogen-reduced metals or ions from an aqueous solution of an ionized salt thereof, that comprises, providing a porous hydrophobic catalytic barrier, contacting one surface of the barrier with said solution, and applying hydrogen gas to the other surface, thereby to produce the hydrogen-reduced mtals or ions at said one surface.

4,331,521
NOVEL ELECTROLYTIC CELL AND METHOD

Raymond S. Chisholm, Pittsburgh, Pa., and Björn Holmström, Monte Carlo, Monaco, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jan. 19, 1981, Ser. No. 226,202
Int. Cl.³ C25B *1/34, 9/00, 13/02, 13/08*
U.S. Cl. 204—98 27 Claims



18. A method of generating halogen which comprises electrolyzing an aqueous halide solution in an electrolytic cell having a diaphragm comprising a multi-layered ion exchange membrane dividing the cell into anode and cathode compartments with anode and cathode respectively therein, said membrane having two fluid tight membrane layers in contact with each other, evacuating between said layers to hold them in contact and maintaining an electrolyzing potential between the anode and cathode while circulating aqueous halide solution in contact with the anode.

4,331,522
REPROCESSING OF SPENT PLASMA

Giancarlo Pierini, Varese, Italy, assignor to European Atomic Energy Commission (EURATOM), Luxembourg, Luxembourg

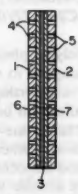
Filed Jan. 12, 1981, Ser. No. 224,014
Int. Cl.³ C25F *1/04*
U.S. Cl. 204—129 8 Claims

1. A process for removing helium and other impurities from a mixture containing deuterium and tritium, which process comprises the following steps: separating out isotopes of hydrogen from the mixture by catalytic oxidation; condensing out hydrogen isotope oxides thus formed; separating by electrolysis a portion of the said oxides in an electrolytic cell in order to produce a protium-rich portion and a non-electrolysed portion distillating the protium-rich portion to separate deuterium and tritium oxides from a distillate rich in water; and electrolysing condensate from the distillation step and the non-electrolysed portion of the electrolysis separation step in order to form a mixture of deuterium and tritium.

4,331,523
METHOD FOR ELECTROLYZING WATER OR AQUEOUS SOLUTIONS

Keiji Kawasaki, Tokyo, Japan, assignor to Showa Denko KK, Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,767
Claim priority, application Japan, Mar. 31, 1980, 55-40454, Feb. 13, 1981, 56-18954, Feb. 17, 1981, 56-20852
Int. Cl.³ C25B *1/04, 1/34, 1/08*
U.S. Cl. 204—129 8 Claims

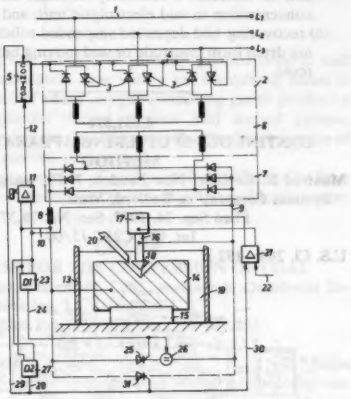


1. In a method for electrolyzing water or an aqueous solution using a cation-exchange membrane provided between an anode and a cathode, the improvement wherein one or both of the anode and cathode are composed of a thin layer of an electrically conductive fibrous assembly having a rigid through-hole bearing current collector disposed on its outside surface, and the electrolysis is carried out while maintaining the two electrodes, the cation exchange membrane and the current collectors in the integrally pressed state.

4,331,524
PROCESS AND APPARATUS FOR ELECTROLYTIC METAL PROCESSING

Hans Matthes, Wermelskirchen, Fed. Rep. of Germany, assignor to AEG-Elotherm, G.m.b.H., Remscheid-Hasten, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,557
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944505
Int. Cl.³ B23P *1/02, 1/12;* B23K *9/16*
U.S. Cl. 204—129.25 16 Claims



1. A process for electrolytic processing of a metallic workpiece comprising the steps of:

applying a direct current voltage to an operating gap between the workpiece and a processing electrode to produce an operating direct current,

advancing said electrode by a driving motor against the surface of said workpiece to remove material,

supplying electrolyte to said gap,

detecting a short circuit producing an arc in said gap, and

extinguishing said arc without reversing said motor by causing, upon detecting of said short circuit, an auxiliary d.c. current of temporally limited duration to flow in said gap, the auxiliary current being in a direction counter to the direction of flow of said operating direct current to thereby cancel and extinguish any short circuit current.

4,331,525
ELECTROLYTIC-ULTRAFILTRATION APPARATUS AND PROCESS FOR RECOVERING SOLIDS FROM A LIQUID MEDIUM

Francis Huba, Mentor, and Roman Zorska, University Heights, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

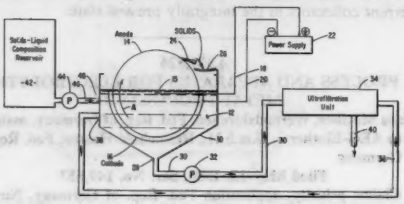
Continuation-in-part of Ser. No. 93,671, Nov. 13, 1979, abandoned. This application Sep. 25, 1980, Ser. No. 190,632
Int. Cl.³ C25D *13/04, 13/14, 13/16*
U.S. Cl. 204—181 F 25 Claims

17. A process for the recovery of suspended solids from a liquid medium consisting essentially of:

(a) feeding said liquid medium containing suspended solids

into an electrolytic unit connected to an ultrafiltration unit;

(b) electrolyzing the liquid medium to effect the removal of suspended solids by deposition on a rotating, drum form electrode or a moving belt electrode and wherein at least a portion of said liquid medium containing solids from the



electrolytic unit is circulated through said ultrafiltration unit to maintain a relatively constant suspended solids concentration in said electrolytic unit; and

(c) recovering said deposited suspended solids on said rotating drum form electrode or said moving belt electrode for reuse.

4,331,526

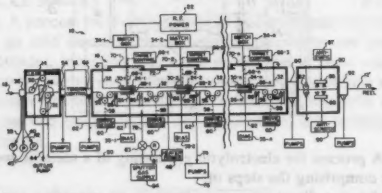
CONTINUOUS SPUTTERING APPARATUS AND METHOD

Manfred R. Kuehnle, New London, N.H., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Sep. 24, 1979, Ser. No. 78,377

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **29 Claims**



1. An inline continuous sputtering apparatus for sputtering insulating material onto the surface of a continuous generally planar web of flexible substrate material passing through the apparatus which comprises:

A. a source of r.f. power of megahertz frequency,

B. a sputtering vessel having grounded metallic walls defining a horizontally extending elongate sputtering chamber, there being at least top, bottom and opposite end walls,

C. first air lock means in both said opposite end walls and pump means for evacuating said first air lock means, said first air lock means isolating said sputtering chamber and together are adapted to receive and provide for the uninterrupted continuous passage of a flexible single web of substrate material into the sputtering chamber from the exterior of the sputtering chamber through one of the opposite end walls thereof and out of the sputtering chamber through the other of said opposite end walls thereof by way of said first air lock means wthout affecting the physical conditions on the interior of the chamber and without exposure to ambient air,

D. means within the chamber for supporting and guiding the web of substrate material throughout its continuous passage into, through and out of the sputtering chamber,

E. a plurality of electrode pairs in the sputtering chamber spaced horizontally one pair from the other along the length of the sputtering chamber, each electrode pair comprising a generally planar target formed of the substance to be sputtered onto the web surface and an opposed anode facing the target and having a generally conforming planar configuration and spaced from said target defining a sputtering gap, within which sputtering plasma is adapted to form, the continuous web adapted to be led through an individual sputtering plasma vapor cloud formed in each sputtering gap,

i. each target having grounded shielding surrounding the same but for its planar exposed surface which faces the anode and defines the sputtering gap therewith,

ii. each target being mounted to the walls of the sputtering vessel electrically insulated therefrom,

F. means coupling the source of r.f. power to all of the electrode pairs and including at least an individual match box coupled to each respective electrode pair for enabling efficient power transfer from the said source to the electrode pairs, each individual match box having one direct connection to the target electrode of the electrode pair it serves,

G. means for driving the web of substrate material through the chamber of the vessel in a continuous movement successively through each plasma vapor cloud in each sputtering gap,

H. means for connecting the anode of each electrode pair to substantially ground potential, and

I. means cooperating with said r.f. power source and electrode pairs for establishing a sputtering condition within all said gaps.

22. A method of sputtering a sputterable material onto a continuously moving flexible web of substrate material from an exterior supply to an exterior take-up, said method comprising the steps of

A. preconditioning the web while moving the same horizontally from the supply through ambient air into an enclosed chamber where the preconditioning occurs,

B. driving the web from said enclosed chamber in a continuous movement through a plurality of sputtering plasma clouds spaced horizontally apart within a second enclosed chamber, each plasma cloud being formed between an electrode pair comprising a target formed of the material to be deposited onto the web and an opposed anode facing the target and having a generally conforming configuration and spaced from said target thereby defining a sputtering gap,

C. Locking the chambers and web from the ambient air while the web passes through said chambers and between chambers, but permitting passage thereof,

D. maintaining uniform r.f. sputtering conditions along with the establishment of said plasma clouds whereby to apply a coating of sputtered material upon a surface of said web as it passes through said sputtering gaps,

E. passing said web in coated condition out of said sputtering chamber and accumulating the same on the take-up.

4,331,527

ROTOGRAVURE CYLINDER PLATING APPARATUS

Hubert Metzger, Brookfield, Wis., assignor to Printing Machinery & Electronics, Inc., Milwaukee, Wis.

Filed Dec. 1, 1980, Ser. No. 211,562

Int. Cl.³ C25D *17/00, 17/12*

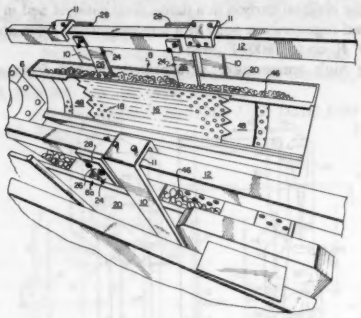
U.S. Cl. 204—212 **4 Claims**

1. Apparatus for electrolytic plating of rotogravure cylinders, comprising a tank adapted to contain a plating solution and including means for supporting therein a cylinder for rotation about a horizontal axis in one direction

baskets disposed in said tank, one on each side of the cylinder, with inner concavo-convex arcuate perforate walls closely spaced from and concentric with the cylinder and outer concavo-convex arcuate walls concentric with and spaced from the inner walls in the direction away form the cylinder, said baskets being of non-conducting plastic material,

elongate metalic anode strips having upper protectively coated portions disposed above the baskets, and lower bare portions extending downwardly along inner sides of the outer basket walls, said lower portion being arcuate and concentric with the cylinder,

means for supplying anode current to the upper portions of the anode strips,



nuggets of metal to be plated onto the cylinder, said nuggets being packed in said baskets between the lower portions of said anode strips and the front walls of the baskets,

said baskets having tops disposed below the top of the cylinder, and supply and return means for maintaining plating solution in the tank with the level thereof below the top of the cylinder and above the tops of the baskets.

4,331,528

COATED METAL ELECTRODE WITH IMPROVED BARRIER LAYER

Henri B. Beer, Heide Kalmthout, Netherlands, and Jean M. Hinden, Chambesy, Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 6, 1980, Ser. No. 194,071
Int. Cl.³ C25B *11/08, 11/10*
U.S. Cl. 204—290 F **40 Claims**

1. An electrode for use in electrolytic processes comprising: a film forming metal substrate having a porous electrocatalytic coating comprising at least one of a platinum-group metal and a platinum-group metal oxide in an amount of at least about 2 g/m^2 over the projected surface area of the substrate, and the substrate having below the coating a preformed barrier layer of a surface oxide film grown up from the substrate and at least one of rhodium and iridium oxides incorporated in the surface oxide film during formation thereof in an amount of up to 1 g/m^2 on a metal weight basis per projected surface area of the substrate.

4,331,529

FLUID COKING AND GASIFICATION PROCESS

Merlan M. Lambert, Conroe, Tex., and Joseph P. Matula, Randolph Township, Dover County, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 5, 1980, Ser. No. 204,390
Int. Cl.³ C10B *49/10, 55/10;* C10J *3/54*
U.S. Cl. 208—8 R **19 Claims**

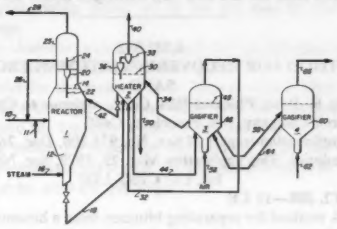
1. An integrated coking and gasification process comprising the steps of:

(a) reacting a carbonaceous chargestock in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions to produce a vapor phase product, including normally liquid hydrocarbons, and coke, said coke depositing on said fluidized solids;

(b) introducing a portion of said solids with the coke deposit thereon to a first fluid bed gasification zone maintained at gasification conditions;

(c) reacting said portion of solids in said first gasification zone with an oxygen-containing gas to produce a first gaseous stream and partially gasified coke and supplying heat from said first gasification zone to said coking zone;

(d) introducing a portion of said partially gasified coke from said first gasification zone to a second fluid bed gasification zone maintained at gasification conditions, said partially gasified coke supplying heat to said second gasification zone;



(e) reacting said portion of partially gasified coke in said second gasification zone with a gas comprising steam in the absence of added oxygen-containing gas to produce a second gaseous stream wherein said second gaseous stream has a higher heating value than the heating value of said first gaseous stream, and

(f) recycling a portion of said partially gasified coke from said second gasification zone to said first gasification zone.

4,331,530

PROCESS FOR THE CONVERSION OF COAL

Shaik A. Qader, Claremont, Calif., assignor to Occidental Research Corporation, La Verne, Calif.

Filed Feb. 27, 1978, Ser. No. 881,233
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **14 Claims**

1. A process for the hydrogenation of coal which comprises:

(a) comminuting coal ore to a particle size range of from about 150 mesh to about 250 mesh;

(b) hydrogenating the particulate coal in a hydrogenation zone in the presence of a hydrogenation catalyst in the vapor phase and selected from the group consisting of halides of zinc and tin, carbonyls of cobalt, iron, transition metals selected from Groups VI, VII and VIII of the Periodic Table, and mixtures thereof, and hydrogen at a temperature of from about 100° to about 300° C. and a pressure of from about 500 to about 1,000 psi for a time sufficient to react hydrogen with the coal to form predominantly hydroaromatic coal; and

(c) recovering the hydrogenated, hydroaromatic coal from the hydrogenation zone.

4,331,531

THREE-STAGE COAL LIQUEFACTION PROCESS

Christopher W. Kuehler, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 87,351, Oct. 22, 1979, Pat. No. 4,264,430. This application Sep. 10, 1980, Ser. No. 183,113
The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **10 Claims**

1. A three-stage process for liquefying coal which comprises:

forming a coal-solvent slurry by mixing subdivided coal with a lean hydrogen-donor solvent;

passing said slurry through a dissolving stage to substantially dissolve said coal;

passing effluent from said dissolving stage with a rich hydrogen-donor solvent through a stabilization stage to partially hydrogenate the dissolved coal;

separating a portion of the effluent from said stabilization stage for use as a lean hydrogen-donor solvent;

passing at least a portion of the remainder of said effluent from said stabilization stage through a catalytic reaction stage containing hydrocracking catalyst and operating under hydrocracking conditions; and

separating a portion of the effluent from said catalytic reaction zone for use as a rich hydrogen-donor solvent.

4,331,532

METHOD FOR RECOVERING BITUMEN FROM TAR SAND

Phillip R. Bose, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 973,300, Dec. 26, 1978, abandoned. This application Mar. 29, 1979, Ser. No. 25,221

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—11 LE **15 Claims**

1. A method for separating bitumen from a bituminous sand, said bituminous sand including bitumen and particulate inorganic solids, and having a water content of more than 0.1 weight percent, comprising:

(a) reducing the concentration of water in said bituminous sand to a concentration less than said water content and greater than 0.01 weight percent by heat treating said bituminous sand at a temperature between 25° C. and 100° C. in the absence of liquid water; and

(b) contacting the resulting dried bituminous sand with an aqueous liquid, and separating bitumen from the aqueous liquid and from said particulate inorganic solids.

4,331,533

METHOD AND APPARATUS FOR CRACKING RESIDUAL OILS

Robert R. Dean, #1 Columbine La., Littleton, Colo. 80123; Jean-Louis Mauleon, 15656 E. Grand Ave., Aurora, Colo. 80112, and Robert W. Pfeiffer, 6 Alden Pl., Bronxville, N.Y. 10708

Filed Jul. 15, 1980, Ser. No. 169,087

Int. Cl.³ C10G *11/18, 11/04;* B01J *21/20, 29/38*

U.S. Cl. 208—113 **6 Claims**

1. In a combination gas oil catalytic cracking-regeneration operation comprising a riser cracking zone in combination with a single regenerator zone of restricted temperature limitations, below 1400° F., the method for improving the operation with respect to feeds processed, catalyst regeneration and providing a high temperature operation for processing high boiling heavy residual oils which comprises,

providing a riser cracking zone in combination with an added second regeneration zone, said second regeneration zone adjacent to but above said restricted temperature regeneration zone,

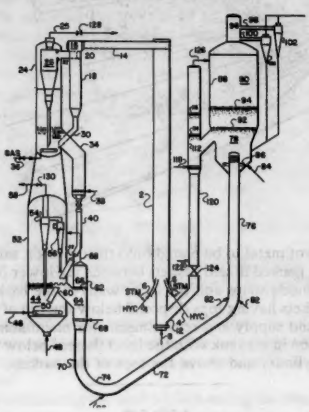
passing a suspension of hydrocarbon product vapor and catalyst following traverse of the riser cracking zone into a suspension breaking zone which promotes the downward flow of separated catalyst particles from product vapors entraining catalyst particles, passing the product vapors through a passageway immediately adjacent the suspension breaking zone in open communication with a cyclone separation zone, separating hydrocarbon product vapors from catalyst in said cyclone separation zone and recovering said hydrocarbon product vapors separately from cyclone separated catalyst,

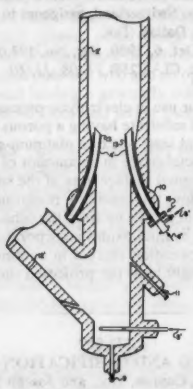
stripping catalyst separated from hydrocarbon vapors before downward passage thereof to a lower portion of a dense fluid bed of catalyst in said temperature restricted regeneration zone,

effecting a partial regeneration of the catalyst in a dense fluid catalyst bed in said temperature restricted regenerating zone up to 1400° F. with an amount of oxygen sufficient to effect from 10 to 90 wt% removal of carbonaceous material and produce a flue gas rich in CO and provide catalyst particles with a residual carbon thereon, passing the partially regenerated catalyst through an external stripping zone and thence through a confined transfer zone to a bottom portion of the upper regeneration zone,

further regenerating the partially regenerated catalyst comprising residual carbon in a dense fluid catalyst bed in the second regeneration zone at a temperature of from about 1500° F. up to 1800° F., and

passing high temperature regenerated catalyst from said





second regeneration zone through an external stripping zone before passage to said riser cracking zone for admixture with said high boiling heavy feed oil charged thereto.

2. The method of claim 1 wherein the high boiling hydrocarbon feed is introduced to the lower portion of the riser cracking zone above the inlet of hot regenerated catalyst inlet thereto through a plurality of steam jacketed feed inlet zones about the riser periphery.

3. The method of claim 1 wherein the high boiling hydrocarbon feed is introduced to said riser cracking zone along with a diluent material, such as steam, normally gaseous C_4 minus hydrocarbons and mixtures thereof.

4,331,534

METHOD OF AND ARRANGEMENT FOR THE DE-INKING OF PULP SUSPENSIONS

Wolfgang Barnscheidt, Dormagen-Straberg, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany and E+M Lamort S.A., Vitry-le-Francois, France

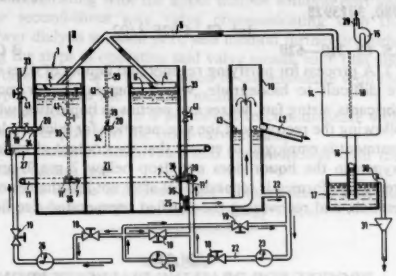
PCT No. PCT/DE79/00090, § 371 Date Apr. 21, 1980, § 102(e) Date Apr. 21, 1980, PCT Pub. No. WO80/00423, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 18, 1979, Ser. No. 194,243

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836496; Apr. 10, 1979, 2914392

Int. Cl.³ B03D *1/24;* D21B *1/32;* D21C *5/02*

U.S. Cl. 209—164 18 Claims



1. In a method of de-inking pulp suspensions by means of flotation, in which the air-laden pulp suspension is introduced into a flotation cell, the foam with the impurities forming on the surface of said pulp suspension is removed and purified pulp suspension accept is drawn off, the improvement which comprises supplying the air-laden pulp suspension to the top region of a flotation cell, drawing off a portion of the accept in the form of purified pulp suspension from the bottom region of said flotation cell, and supplying an air-water suspension to said flotation cell in the region above the accept outlet and conducting said air-water suspension in the counterflow to the sinking accept fibers.

4,331,535

LEAKAGE DETECTING AND DETOURING FILTER HOUSING-ASSEMBLY

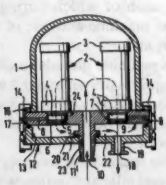
Manfred Pett, Gleichen-Bremke, Fed. Rep. of Germany, assignor to Sartorius GmbH, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,790

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 7917271[U]

Int. Cl.³ B01D *27/00*

U.S. Cl. 210—85 1 Claim



1. A leakage detecting and detouring filter housing assembly of a plurality of mating parts for a plurality of cartridge-shaped filter elements comprising:

a bell-shaped case top part;

an intermediate plate provided with a plurality of perforations;

a dish-shaped base plate;

a plurality of cartridge-shaped filter elements attached to the intermediate plate, said filter elements having an end cap thereof sealed in the perforations of the intermediate plate;

a leakage control channel for each filter element connecting the area between at least two ring packings with the outside of the housing, the ring packings arranged longitudinally, spaced on the cap against the top part, the intermediate plate being sealed off in the top part by the ring packings;

a filtrate chamber which closes off the intermediate plate and in which a filter-outlet side ends;

a filter inlet for the medium to be filtered, which filter inlet protrudes through the base plate and the intermediate plate into the top part of the casing; and

clamping means for fluidtight connections of the top part, the intermediate plate, and the dish-shaped plate at their peripheries with the packings.

4,331,536

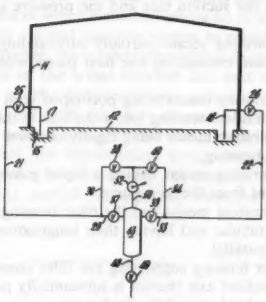
COMBINATION FOR REMOVING HEAVIER LIQUID FROM THE BOTTOM OF A STORAGE TANK

Robert M. Maham, Beaumont, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 14, 1980, Ser. No. 167,877

Int. Cl.³ B01D *17/02*

U.S. Cl. 210—95 4 Claims



1. In combination, a storage tank having a sump in the bottom thereof for collecting heavier liquid such as water or the like,

a dip leg conduit extending down into said sump for drawing off said heavier liquid,

a float actuated valve having a drain outlet at the bottom for draining said heavier liquid,

said float actuated valve also having an inlet at the side thereof for receiving said heavier liquid and an outlet at the top for circulating product liquid to said storage tank,

a manual circulating pump,

means for connecting said dip leg conduit to said valve inlet and said valve outlet to said circulating pump, and

means for connecting said circulating pump to said storage tank, all whereby said heavier liquid is drained while said product liquid is returned to the tank.

4,331,537

APPARATUS FOR FILTERING A LIQUID

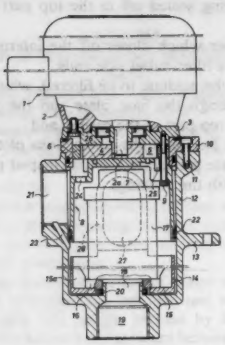
Manfred Klauck, Lebach, Fed. Rep. of Germany, assignor to Flutec Fluidtechnische Gerate GmbH, Sulzbach, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 167,690

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927970

Int. Cl.³ B01D *29/10*

U.S. Cl. 210—416.1 7 Claims



1. In an apparatus for filtering a liquid including a potshaped filter housing having an open side and having a filter element disposed therein between an inlet and an outlet of the filter housing and a pump housing having a liquid feed pump therein and located adjacent the filter housing, wherein the improvement comprises:

means for supporting the feed pump at the open side of the potshaped filter housing; and

separating means, located inside the filter housing, for separating the suction side and the pressure side of the feed pump,

said separating means partially surrounding the filter element and connecting the feed pump with the filter element,

said separating means being potshaped with an open side,

said open side extending below the inlet in the filter housing,

said separating means being rigidly coupled to a part of the pump housing,

said separating means having a liquid passage to the filter element from the feed pump,

said separating means and the filter housing being substantially tubular and having their longitudinal axes substantially parallel,

said filter housing supporting the filter element so that the longitudinal axis thereof is substantially parallel with the longitudinal axis of the feed pump.

4,331,538

METHOD FOR BUILDING UP DEFINED PHOSPHATE DEPOSITS FROM WASTE PHOSPHATES

Reinhold W. Kickuth, Gilsbergstrasse 9, 3436 Hess.-Lichtenau, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,739

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944421

Int. Cl.³ C02F *3/32*

U.S. Cl. 210—602 24 Claims

1. A method for forming a phosphate deposit comprising passing a phosphate containing aqueous liquid through a reaction space comprised of a soil matrix containing a selected one of iron and aluminum and in which are planted reed-like plants having roots which penetrate and activate the soil matrix of the reaction space for deposit of phosphate from the phosphate containing aqueous liquid by creating in said reaction space a hydraulic conductivity in the range of from about 10^{-3} to about 10^{-2} m per sec, and by supplying oxygen to said soil matrix about said roots to form in said soil matrix a pattern of aerobic and anaerobic micro compartments, and continuing the passing of the liquid for sufficient time such that phosphate is deposited from the liquid onto the soil matrix.

4,331,539

PURIFICATION OF REGENERATED SIZING LIQUORS

Wolfgang Schenk, Plankstadt; Wilfried Kothe, Ludwigshafen, and Karl H. Popp, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 10, 1981, Ser. No. 242,303

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3013925

Int. Cl.³ C02F *3/02*

U.S. Cl. 210—620 3 Claims

1. A process for purifying regenerated liquors of sizes which are difficult to biodegrade, which contain one or more of lubricants, sizing fats, waxes and pectins as impurities, wherein following the recovery of the size, aeration for microbiological treatment is employed to ensure that the content of molecular oxygen in the liquor does not drop below 2 mg/l, and the precipitate formed is separated off after not less than one day's aeration, and recovering the purified regenerated size liquor.

4,331,540

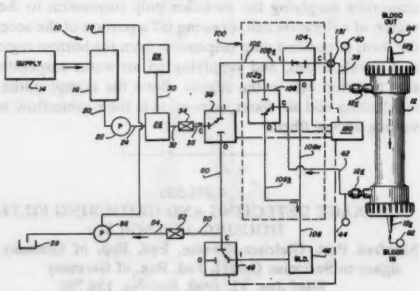
PROCESS FOR DRAINING DIALYSATE FROM ARTIFICIAL KIDNEY

David A. Witsoe, Libertyville, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 21, 1980, Ser. No. 142,602

Int. Cl.³ B01D *13/00, 31/00*

U.S. Cl. 210—646 3 Claims



1. A method of draining dialysis solution from a negative-pressure-type dialyzer which is connected to a dialysis machine;

where the dialyzer has a dialysis solution inlet and a dialysis solution outlet, each of which during dialysis is directly connected to the machine and one of which is positioned above the other; and

where the dialysis machine includes a dialysis solution flow path whereby liquid is drawn under a negative pressure by pump means, from a supply through valve means, through said dialyzer and then flows to a drain, said method comprising the steps of:

operating said valve means so as to apply a negative pressure to the lower of said inlet and outlet, while preventing flow of dialysis solution to each of said inlet and outlet; and

venting the upper of said inlet and outlet so as to permit said negative pressure to drain said dialysis solution therefrom;

wherein said valve means include:

(a) to-valve means having an activated position in which said

supply is in fluid communication with said dialyzer and a deactivated position in which said supply is in communication with said pump means;

(b) from-valve means having an activated position in which said pump means and dialyzer are in fluid communication and a deactivated position in which said communication is interrupted;

(c) flow reversing valve means communicating with said dialyzer and said to-valve means and from-valve means for controlling the direction of dialysis solution flow in the dialyzer;

wherein said flow reversing valve means includes a first three-way valve and a second three-way valve, each of which communicates with said to-valve means and said from-valve means and with the first three-way valve communicating with the upper dialysis solution port and the second-three way valve communicating with the lower dialysis solution port; said method further comprising the steps of operating said valve means, such that said

first three-way valve is positioned to communicate with the upper port and the to-valve means;

second three-way valve is positioned to communicate with the lower port and the from-valve means;

to-valve means is deactivated and communicates with the pump means; and

from-valve means is activated and communicates with the pump means and the second three-way valve.

4,331,541
FIBER-SUPPORTED ION EXCHANGER

Hiroshi Akiyama, Ichikawa, and Hideo Naotsuka, Omiya, both of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

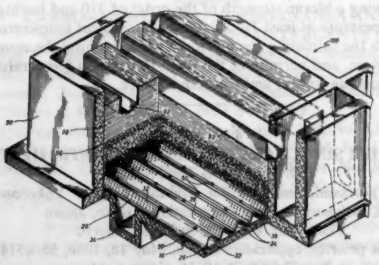
Filed Mar. 3, 1980, Ser. No. 126,274
Claims priority, application Japan, Feb. 20, 1979, 54-17827
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—679 **17 Claims**

17. A method for removal of ions from a solution which comprises contacting the solution containing the ions with an ion exchanger comprising a macroporous structure of fibers having interstices between the individual fibers thereof, and disposed within said interstices and adhered to said fibers, a macroreticular, crosslinked polymer derived from polyvinyl monomers or a mixture of monovinyl and polyvinyl monomers and bearing ion exchange functional groups.

4,331,542
UNDERDRAIN UNIT WITH AIR/WATER BACKWASH FOR GRANULAR FILTRATION SYSTEM

Robert E. Emrie, Austin, Tex., assignor to Enviroquip, Inc., Austin, Tex.

Filed Aug. 1, 1980, Ser. No. 174,716
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—794 **10 Claims**



7. A filtration and backwashing system for a liquid filtration system, comprising:

(a) a filtration tank having a substantially horizontal floor;

(b) a means for admitting unfiltered liquid into said tank;

(c) a plurality of convex longitudinal ribs placed parallel to one another, said ribs together with said floor forming a corrugated surface defining a plurality of inner chambers between said floor and said ribs and a plurality of valleys between said ribs;

(d) a plurality of holes through the sides of said ribs, said holes permitting the passage of a fluid between the longitudinal inner chambers and the upper portions of the tank;

(e) a means for conducting filtered liquid out of each inner chamber and out of said tank;

(f) a controlled backwash liquid header system in fluid communication with each of said longitudinal inner chambers, said liquid header system to conduct liquid to each longitudinal inner chamber during backwashing; and

(g) a controlled backwash gas header system, comprising a plurality of exhaust gas outlets in fluid communication with a controlled gas distribution system, said outlets located on said horizontal floor for exhausting gas into said valleys between said ribs during backwashing,

said header systems being separately controllable and positioned to produce turbulent mixing of said backwash liquid and said backwash gas in said valleys between said ribs.

4,331,543
METHOD OF RETARDING DEGRADATION OF SURFACTANTS EMPLOYED IN WATERFLOODING

Peggy M. Wilson, and Julie Pao, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,899
Int. Cl.³ E21B *43/27*
U.S. Cl. 252—8.55 D **5 Claims**

1. In an improved method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems in which water containing no oil is injected into said reservoir via said injection system to displace oil to said production system, the method comprising employing, as at least a portion of the water injected into said reservoir, water containing an ether-linked sulfonate surfactant, the ether link containing from 1 to 20 aklylene oxide units, said alkylene oxide units being derived from ethylene oxide, propylene oxide or mixtures thereof, the improvement comprising adding to said water containing said surfactant, to stabilize same, an oxidation inhibiting amount of a sterically hindered phenolic compound.

4,331,544
CATALYST FOR METHANATION AND METHOD FOR THE PREPARATION THEREOF

Haruo Takaya, Abiko; Tadasuke Hosoya, Chiba; Kiyoshi Ogawa, Yokohama; Shigemitsu Shin, Yatabe; Michio Araki; Kunio Suzuki, both of Sakura, and Naoyuki Todo, Abiko, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,401
Claims priority, application Japan, Feb. 1, 1980, 55-11734; Mar. 6, 1980, 55-28877
Int. Cl.³ B01J *23/84*
U.S. Cl. 252—463 **10 Claims**

1. A solid catalyst for the synthesis of methane from hydrogen and carbon monoxide which comprises

(a) a porous catalyst carrier, and

(b) a binary active ingredient composed of an alloy of nickel and molybdenum and a molybdenum carbide supported on the porous catalyst carrier.

4,331,545

LUBRICATING COMPOSITIONS CONTAINING BORONATED N-ALKANOL HYDROCARBYLAMIDE

Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 31,621, Apr. 19, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,694

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—49.6 **12 Claims**

1. A friction-reducing additive effective in reducing friction in internal combustion engines, said additive comprising the product obtained by the process comprising reacting a N-alkanol hydrocarbylamide having the structure:

$$R_1—CO—NR_2—R_3—OH$$

wherein R_1 is an aliphatic hydrocarbon group containing about 12–36 carbon atoms, R_2 is selected from the group consisting of hydrogen and lower alkyl and R_3 is a divalent hydrocarbon group containing 2 carbon atoms, with a boron compound selected from the group consisting of boric acid, esters of boric acid and mixtures of boric acid and alcohol wherein said alcohols are selected from the group consisting of monohydroxy alcohols containing 1 to about 20 carbon atoms, polyhydroxy alcohols containing 2 to about 6 carbon atoms and 2 to about 6 hydroxy groups and polyalkylene glycol containing 2 to about 10 alkyleneoxy groups.

5. Lubricating oil suitable for use in the crankcase of internal combustion engines containing a friction-reducing amount of an oil-soluble product obtained by the process comprising reacting a N-alkanol hydrocarbylamide having the structure:

$$R_1—CO—NR_2—R_3—OH$$

wherein R_1 is an aliphatic hydrocarbon group containing about 12–36 carbon atoms, R_2 is selected from the group consisting of hydrogen and lower alkyl and R_3 is a divalent hydrocarbon group containing 2 carbon atoms, with a boron compound selected from the group consisting of boric acid, esters of boric acid and mixtures of boric acid and alcohol wherein said alcohols are selected from the group consisting of monohydroxy alcohols containing 1 to about 20 carbon atoms, polyhydroxy alcohols containing 2 to about 6 carbon atoms and 2 to about 6 hydroxy groups and polyalkylene glycol containing 2 to about 10 alkyleneoxy groups.

9. A lubricating oil composition of claim 5 further containing a minor amount sufficient to further reduce friction of a di-C_{1-4} alkyl C_{12-36} hydrocarbylphosphonate.

4,331,546

LUBRICANT COMPOSITION CONTAINING PHOSPHITE-DIARYLAMINE-CARBONYL COMPOUND REACTION PRODUCT

Gerassimos Frangatos, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 7,872, Jan. 31, 1979, abandoned, and Ser. No. 115,961, Jan. 28, 1980, abandoned. This application Dec. 3, 1980, Ser. No. 212,295

Int. Cl.³ C10M *1/46*

U.S. Cl. 252—49.9 **8 Claims**

1. A product of reaction formed by reacting at least equimolar quantities of (1) a dialkyl phosphite of the formula:

$$(RO)_2\overset{\overset{O}{\|}}{P}—H$$

wherein R is a C_1–C_6 alkyl group, a phenyl or naphthyl group, a phenyl or naphthyl group having a C_1–C_{10} alkyl group attached thereto or a phenethyl group, (2) an amine of the formula:

$$Ar—NH—R^1$$

wherein Ar and R^1 are aryl groups containing 6 to 14 carbon atoms and (3) a carbonyl-containing compound selected from the group consisting of the formula:

$$R^3—ArCHO,\ R^4CHO \text{ and } R^5COR_6$$

wherein R^3 is hydrogen, a C_1–C_{24} alkyl group, —OH, —NO_2, —Cl, —Br, —SH or —CN, Ar is an aryl group containing 6 to 14 carbon atoms, R^4 is a C_1–C_{24} alkyl group and R^5 and R^6 are the same or different C_1–C_{20} alkyl groups, C_1–C_{20} haloalkyl groups or C_6–C_{14} aryl groups, wherein said aryl is phenyl, naphthyl or anthryl.

5. A lubricant composition comprising a major proportion of a lubricant and an antioxidant amount of a product of reaction formed by reacting at least equimolar quantities of (1) a dialkyl phosphite of the formula:

$$(RO)_2\overset{\overset{O}{\|}}{P}—H$$

wherein R is a C_1–C_6 alkyl group, a phenyl or naphthyl group, a phenyl or naphthyl group having a C_1–C_{10} alkyl group attached thereto or a phenethyl group, (2) an amine of the formula:

$$Ar—NH—R^1$$

wherein Ar and R^1 are aryl groups containing 6 to 14 carbon atoms and (3) a carbonyl-containing compound selected from the group consisting of the formula:

$$R^3—ArCHO,\ R^4CHO \text{ and } R^5COR_6$$

wherein R^3 is hydrogen, a C_1–C_{24} alkyl group, —OH, —NO_2, —Cl, —Br, —SH or —CN, Ar is an aryl group containing 6 to 24 carbon atoms, R^4 is a C_1–C_{24} alkyl group and R^5 and R^6 are the same or different C_1–C_{14} aryl groups, wherein said aryl is phenyl, naphthyl or anthryl.

8. The composition of claim 5 wherein the product of reaction is made by reacting dibutyl phosphonate, heptanal and N-phenyl-alpha-naphthylamine.

4,331,547

COLLAGEN PROTEIN THERMAL INSULATING FOAM AND METHOD

Everett J. Stotts, Rte. #1, Rupert, Id. 83350, and Glenn S. Arbuthnot, 550 W. Patrice Pl., Unit A, Gardena, Calif. 90248

Filed Nov. 21, 1980, Ser. No. 208,945

Int. Cl.³ C04B *43/00*; C08J *9/00*; C09H *5/00, 9/00*

U.S. Cl. 252—62 **9 Claims**

1. A process for producing a collagen protein thermal insulating foam which comprises: dissolving in water in a proportion of 10:5 by weight a quantity of material including animal glue having a bloom strength of the order of 310 and having a gel temperature at least 10° F. above the ambient temperature at which the insulating foam is to be used, foaming the resulting solution, and permitting the foam to dry at a temperature corresponding to said ambient temperature.

4,331,548

FERRITE SINGLE CRYSTAL AND MAGNETIC HEAD CONTAINING THE SAME

Mineo Yorizumi, and Yoshimi Makino, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,410

Claims priority, application Japan, May 16, 1980, 55/65143

Int. Cl.³ C04B *35/38*; G11B *5/14*

U.S. Cl. 252—62.61 **12 Claims**

1. A ferrite single crystal having the composition:

$$[(Li_{0.5}Fe_{0.5})_{1-(x+y)}Mn_xZn_y]_{1-a}Co_aFe_{2.0}O_4$$

wherein x is from 0.1 to 0.4, y is from 0.3 to 0.55, and a is from 0 to 0.015.

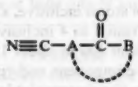
4,331,549

HYDRAULIC FLUIDS CONTAINING CYANO DERIVATIVES OF KETONES

Bart J. Bremmer, Ashland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

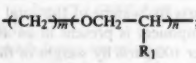
Filed Apr. 21, 1980, Ser. No. 142,514
Int. Cl.³ C10M 3/26
U.S. Cl. 252—77 **8 Claims**

6. In the operation of a fluid pressure operating device which uses hydraulic pressure transmission fluid, the improvement comprising using as said hydraulic pressure transmission fluid a fluid comprising one or more cyano-substituted compounds of from 3 to 20 carbons of the formula



wherein:

A is a divalent radical of from 2 to 10 carbons selected from branched or linear alkylene and



wherein R_1 is each occurrence hydrogen, methyl or ethyl and m and n are integers equal to or greater than 1;

B is a monovalent radical of from 1 to 10 carbons selected from branched or linear alkyl and cyano-, hydroxy-, or oxyalkyl-substituted derivatives thereof, and

furthermore may optionally be oxocycloalkyl.

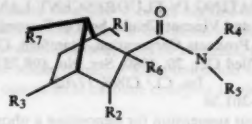
4,331,550

CARBOAMIDOALKYL NORBORNANES AND ORGANOLEPTIC USE IN DETERGENTS

Philip T. Klemarczyk, Old Bridge; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown, and Domenick Luccarelli, Jr., Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,632, Nov. 13, 1980, Pat. No. 4,324,912, which is a continuation-in-part of Ser. No. 152,188, Jul. 17, 1980, abandoned. This application May 28, 1981, Ser. No. 268,117
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—174.11 **2 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic, or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic, or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one norbornane derivative defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and wherein R_2 is methyl or hydrogen; R_6 is methyl or hydrogen; R_1, R_3, or R_7 represent methyl or hydrogen, with the proviso that one of R_1, R_3 and R_7 represents methyl and the other two of R_1, R_3 and R_7 represent hydrogen; wherein R_4 and R_5 are the same or different and each represents hydrogen or C_1–C_3 lower alkyl.

4,331,551

METHOD OF REMOVING RUTHENIUM CONTAMINATION FROM RADIOACTIVE EFFLUENTS

Yves Berton, Le Puy-Ste Reparade, and Pierre Chauvet, Manosque, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 29, 1980, Ser. No. 144,911
Claims priority, application France, May 7, 1979, 79 11470
Int. Cl.³ G21F 9/12
U.S. Cl. 252—631 **5 Claims**

1. A method of removing ruthenium contamination from a radioactive liquid effluent, wherein:

(a) the pH of said effluent is adjusted to a value of less than 5 and copper ions are added thereto,

(b) the effluent thus treated is brought into contact with iron to precipitate copper which entrains the ruthenium, and

(c) liquid effluent is separated from the sludge formed.

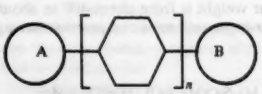
4,331,552

LIQUID CRYSTALLINE, PARTIALLY HYDROGENATED OLIGO-1,4-PHENYLENES AND DIELECTRICS AND ELECTRO-OPTICAL DISPLAY ELEMENTS CONTAINING THEM

Rudolf Eidenschink, Dieburg; Ludwig Pohl, Darmstadt; Michael Römer, Rodgau, all of Fed. Rep. of Germany, and Fernando del Pino, Quito, Ecuador, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,520
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948836
Int. Cl.³ G02F 1/13; C09K 3/34; C07C 13/28
U.S. Cl. 252—299.6 **9 Claims**

1. A partially hydrogenated oligo-1,4-phenylene of the formula



wherein n is 1 or 2, the rings A and B are identical or different and are trans-4-alkylcyclohexyl or 4-alkylcyclohex-1-enyl, and the alkyl groups in each case are of up to 10 carbon atoms, and are straight chained or branched containing only one chain branching.

4,331,553
FRIT MATERIAL FOR USE WITH PHOSPHOR COATING IN FLUORESCENT LAMP
Albert K. Fan, and Vincent Chiola, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Oct. 20, 1980, Ser. No. 198,753
Int. Cl.³ C09K *11/02*
U.S. Cl. 252—301.36 2 Claims

2. An aqueous suspension for depositing a phosphor coating on a lamp envelope comprising finely divided phosphor particles dispersed in water; a temporary organic binder which can be essentially completely removed from a lamp envelope on which the phosphor coating has been deposited upon firing under appropriate conditions; and a minor amount of an amorphous borate-phosphate adhesive frit which will bond the phosphor particles to each other and to the lamp envelope upon firing under appropriate conditions, wherein the amount of borate-phosphate frit equals about 2 to 10 weight percent of the phosphate and the frit has the composition $Ca_{1-x+2n}Ba_xO_{1+2n}\cdot mB_2O_3\cdot nP_2O_5$, where x is between about 0.2 to 0.4, n is between about 0.7 to 1.3, and m is between about 1.7 to 2.3.

4,331,554
DEMULSIFICATION PROCESS WITH THIAZINE QUATERNARY AMMONIUM SALTS OF POLYEPIHALOHYDRIN
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.
Division of Ser. No. 32,036, Apr. 23, 1979. This application Jun. 9, 1981, Ser. No. 271,901
Int. Cl.³ B01D *17/04*
U.S. Cl. 252—344 10 Claims

1. A process of demulsification which comprises treating an emulsion system with a thiazine quaternary ammonium salt of polyepihalohydrin wherein the nitrogen atom of the thiazine moiety is attached to the polymeric chain through a $-CH_2-$ group.

4,331,555
USE OF ORGANOSILOXANE COMPOSITIONS AS FOAM STABILIZERS IN FLEXIBLE POLYESTER POLYURETHANE FOAM
Feyyaz O. Baskent, Mahopac, and Michael R. Sandner, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Sep. 29, 1980, Ser. No. 191,520
Int. Cl.³ B01F *17/54*
U.S. Cl. 252—351 1 Claim

1. A composition consisting essentially of (a) an organosiloxane composition selected from the group consisting of:

(I) a cyano-organosiloxane composition having the average formula,

$$Me_3SiO(Me_2SiO)_x(MeSiO)_ySiMe_3$$
$$|$$
$$R(OR')_qCN$$

wherein Me is a methyl group, R is an alkylene group of from 2 to 6 carbon atoms inclusive, R' is an alkylene group of from 2 to 4 carbon atoms inclusive, x has a value of at least 1, y has a value of at least 1, q has a value of 0 or 1, the ratio of x to y has a value from 1 to 4 inclusive, and the molecular weight is from about 400 to about 1500;

(II) an ether-organosiloxane composition having the average formula,

$$Me_3SiO(Me_2SiO)_x(MeSiO)_ySiMe_3$$
$$|$$
$$R(OC_aH_{2a})_bOG$$

wherein Me is a methyl group, R is an alkylene group of from 2 to 6 carbon atoms inclusive, G is an organic cap, x has a value of at least 1, y has a value of at least 1, a has an average value from 2 to 4 inclusive, b has an average value from 2 to 4 inclusive, the ratio of x to y has a value from about 400 to about 1500;

(III) a hydroxy-organosiloxane composition having the average formula,

$$Me_3SiO(Me_2SiO)_x(MeSiO)_ySiMe_3$$
$$|$$
$$ROH$$

wherein Me is a methyl group, R is an alkylene group of from 2 to 6 carbon atoms inclusive, x has a value of at least 1, y has a value of at least 1, the ratio of x to y has a value from 1 to 4 inclusive, and the molecular weight is from about 400 to about 1500; and

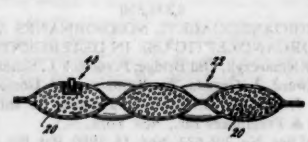
(IV) a phenyl-organosiloxane composition having the average formula,

$$MeSiO(Me_2SiO)_x(MeSiO)_ySiMe_3$$
$$|$$
$$RC_6H_5$$

wherein Me is a methyl group, R is an alkylene group of from 2 to 6 carbon atoms inclusive, x has a value of at least 1, y has a value from 1 to 4 inclusive, and the molecular weight is from about 400 to about 1500;

(b) an organic acidic component and (c) at least one of the following components: (i) a water soluble organic surfactant of the nonionic, anionic, cationic or amphoteric types including combinations thereof; (ii) a water soluble glycol; and (iii) an oxidative/hydrolytic inhibitor and wherein the organosiloxane composition is present in an amount of from 10 to 80 parts by weight per 100 parts by weight of the total composition, the organic acidic component is present in an amount of 5 to 90 parts by weight per 100 parts by weight of the organosiloxane composition, the water soluble organic surfactant and water soluble glycol are present in a combined amount of from 5 to 90 parts by weight per 100 parts by weight of the organosiloxane composition, and the oxidative/hydrolytic inhibitor is present in an amount of about 1 part by weight per 100 parts by weight of the total composition.

4,331,556
HEAT STORAGE MATERIAL
Gustaf O. Arrhenius, La Jolla, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.
Filed Jan. 3, 1978, Ser. No. 866,695
Int. Cl.² B01F *3/00*
U.S. Cl. 252—363.5 22 Claims



1. In combination,
a melt having properties of crystallizing into a monolithic mass when nucleated, and
a liquid additive material, in a weight to approximately ten percent (10%) by weight, having properties of occlusion in the growing crystals and exsolving to separate the resulting crystallites and limit their size and of controlling the temperature of the mixture during the time that the melt becomes crystallized.

4,331,557

REGENERATION OF RUTHENIUM-CONTAINING CATALYST

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 22, 1980, Ser. No. 152,229
Int. Cl.[3] B01J 23/96, 21/20; C07C 87/14
U.S. Cl. 252—411 R 3 Claims

1. A process for the regeneration of a used ruthenium-containing hydrogenation catalyst, wherein the used catalyst results from the hydrogenation of a branched-chain unsaturated aliphatic dinitrile and, subsequent to regeneration, the catalyst is reused for such a hydrogenation, which regeneration comprises the steps of:

(1) heating the catalyst at a temperature in the range of about 150° C. to about 350° C. and at a pressure in the range of about 0.1 to about 10 mm. of mercury, and, subsequently,

(2) reducing the same in the presence of hydrogen at a temperature in the range of about 100° C. to about 600° C. for a time sufficient to activate it.

2. A process according to claim 1 wherein the catalyst is heated at an elevated temperature and at a reduced pressure in an inert atmosphere.

3. A process according to claim 1 wherein there is present during a regeneration at least one of nitrogen and helium.

4,331,558

POLYMERIZATION CATALYST AND PROCESS

Melvin B. Welch, Bartlesville, Okla., and Richard E. Dietz, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

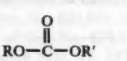
Continuation-in-part of Ser. No. 968,156, Dec. 11, 1978, Pat. No. 4,243,552. This application Oct. 16, 1980, Ser. No. 197,456
Int. Cl.[3] C08F 4/64
U.S. Cl. 252—429 B 14 Claims

1. A catalyst which forms on mixing:

A. a catalyst component A formed by milling

(1) a magnesium halide or manganous halide with

(2) at least one carbonic acid ester of the formula



wherein R is an aryl group having from 6 to about 20 carbon atoms and R′ is the same as R or hydrogen,

(3) treating the composite thus obtained from (1) and (2) with a tetravalent titanium halide for a period of time sufficient to incorporate titanium tetrahalide on at least a portion of the surface of said milled composite; and

B. a cocatalyst component B comprising an organoaluminum compound wherein the molar ratio of component B to titanium compound ranges from 0.5:1 to 2,000:1 and the amount of titanium present in the finished catalyst ranges from about 0.1 to about 10 weight percent based on the dry composite.

4,331,559

OLEFIN DISPROPORTIONATION

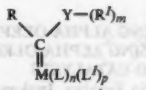
Dennis S. Banasiak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 101,031, Dec. 6, 1979, Pat. No. 4,269,780. This application Feb. 3, 1981, Ser. No. 230,982
Int. Cl.[3] B01J 31/12
U.S. Cl. 252—429 R 10 Claims

1. A catalyst for the disproportionation of olefins comprising:

(1) at least one inorganic metal compound component selected from a chloride or bromide of a metal of Group IVa (including germanium), IVb, Vb, VIb, VIIb, VIII, or Ib of the Periodic Table, or an oxychloride or oxybromide of molybdenum, tungsten, vanadium, or chromium; wherein if the metal is vanadium it is in an oxidation state of either 4 or its highest stable common ionic oxidation state, if the metal is molybdenum, tungsten, or rhenium, it is in an oxidation state of either 5 or its highest stable common ionic oxidation state, and if the metal is other than vanadium, molybdenum, tungsten, or rhenium, the metal is in its highest stable common ionic oxidation state; and

(2) at least one neutral carbene complex having the general formula



wherein R is an alkyl or cycloalkyl radical containing 1 to 10 carbon atoms, an aryl or substituted aryl radical containing 6 to 30 atoms, wherein the substituted radicals have one or more substituents each of which is the same or different and is a halide, alkoxide, or alkyl radical containing 1 to 20carbon atoms; R^I is an alkyl, cycloalkyl, aryl, substituted aryl, triarylsilyl or trialkylsilyl radical containing 1 to 30 carbon atoms, and the aryl substituents are as described for R; M is tungsten or rhenium when component (1) does not contain titanium or M is chromium when component (1) does contain titanium; Y is oxygen, sulfur, selenium, nitrogen or phosphorus; each L is a neutral ligand individually selected from CO, NO, PR^I_3, PCl_3, PF_3, and pyridine, where R^I is as defined above; L^I is cyclopentadienyl; p is 0 or 1; n is 5 when p is 0 and n is 2 when p is 1; and m is 2 when Y is nitrogen or phosphorus and m is 1 when Y is oxygen, sulfur or selenium; wherein the molar ratio of component (1) to component (2) is in the range of 1:1 to 500:1.

4,331,560

CATALYST AND PROCESS FOR PREPARING ORGANIC ISOCYANATES

Wayne R. Pretzer, Gibsonia, and Richard B. Pannell, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 20, 1981, Ser. No. 255,693
Int. Cl.[3] B01J 31/02; C07C 118/06
U.S. Cl. 252—429 R 11 Claims

1. A process for preparing an organic isocyanate, which comprises:

reacting an organic nitro compound with carbon monoxide in the presence of a catalyst comprised of

(a) a noble metal compound,

(b) a heteroaromatic nitrogen compound having a ring with

(1) between five and six members in the ring,

(2) only nitrogen and carbon in the ring,

(3) no more than two nitrogens in the ring, and

(4) containing at least two double bonds in the ring,

wherein the molar ratio of the heteroaromatic nitrogen compound to the nobel metal compound lies between about 0.1 to 1 and 20 to 1,

(c) an actinide oxide selected from the oxides of uranium and thorium, wherein the weight ratio of the noble metal compound to the actinide oxide lies between about 0.001 to 1 and 50 to 1.

8. A catalyst system useful in the preparation of organic isocyanates from the corresponding organic nitro compounds, which comprises in combination:

(a) a noble metal compound,

(b) a heteroaromatic nitrogen compound having a ring with,

(1) between five and six members in the ring,

(2) only nitrogen and carbon in the ring,

(3) no more than two nitrogens in the ring,

(4) at least two double bonds in the ring,

wherein the molar ratio of the heteroaromatic nitrogen com-

pound to the noble metal compound lies between about 0.1 to 1 and 20 to 1,

(c) an actinide oxide selected from the group consisting of U_2O_5, U_3O_8 and ThO_2, wherein the weight ratio of the noble metal compound to the actinide oxide lies between about 0.001 to 1 and 50 to 1.

4,331,561

CATALYSTS FOR POLYMERIZING ALPHA-OLEFINS AND PROCESS FOR POLYMERIZING ALPHA-OLEFINS IN CONTACT WITH SAID CATALYSTS

Luciano Luciani, Ferrara, Italy; Norio Kashiwa, Iwakuni, Japan; Pier C. Barbe, Ferrara, Italy, and Akinori Toyota, Ohtake, Japan, assignors to Montedison S.p.A., Milan, Italy and Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 934,539, Aug. 17, 1978, Pat. No. 4,226,741, which is a continuation of Ser. No. 832,473, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 723,431, Sep. 14, 1976, abandoned. This application Jan. 28, 1980, Ser. No. 116,257

Claims priority, application Italy, Nov. 21, 1975, 29525 A/75

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ C08F 4/64

U.S. Cl. 252—429 B 2 Claims

1. Catalysts for the polymerization of alphaolefins containing at least 3 carbon atoms and mixtures thereof with ethylene, comprising the product obtained by contacting the following starting components:

(a) a hydrocarbyl Al compound not containing halogen atoms directly bound to Al;

(b) an electron-donor selected from the group consisting of alkyl silicates and aryl silicates;

(c) a solid component comprising, at least on the surface, the reaction product of a Mg dihalide with a halogenated tetravalent Ti compound selected from the group consisting of Ti tetrahalides and Ti halogen alcoholates and with a hydrocarbyl electron-donor capable of forming complexes with Mg dihalides, the molar ratio electron-donor/Ti in said product being higher than 0.2 and the molar ratio halogen atoms/Ti being comprised between 10 and 90, component (c) being further characterized in that at least 80% by weight of the tetravalent Ti compounds contained therein is insoluble in boiling n-heptane and in that at least 50% by weight of the Ti compounds insoluble in n-heptane is insoluble in $TiCl_4$ at 80° C., and also in that the surface area of the product insoluble in $TiCl_4$ at 80° C., and the surface area of component (c) as such, is higher than 40 m^2/g.

4,331,562

CATALYST FOR THE HYDROGENATION OF OLEFINICALLY UNSATURATED COMPOUNDS

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 705,485, Jul. 15, 1976, Pat. No. 4,261,927. This application Nov. 21, 1980, Ser. No. 209,075

Int. Cl.³ B01J 23/10, 23/64, 27/24

U.S. Cl. 252—438 12 Claims

1. A composition comprising at least one first component selected from the group consistng of elemental palladium, elemental ruthenium, compounds of palladium which are reducible by hydrogen to elemental palladium, and compounds of ruthenium which are reducible by hydrogen to elemental ruthenium; and at least one second component selected from the group consisting of chromium nitrate and lanthanum nitrate.

4,331,563

PRODUCING INCREASED YIELD OF HYDROGEN BY CRACKING PETROLEUM WITH POTASSIUM-CONTAINING CATALYST

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 18, 1978, Ser. No. 934,925

Int. Cl.³ B01J 29/06

U.S. Cl. 252—455 Z 4 Claims

1. A petroleum cracking catalyst suited for cracking a petroleum hydrocarbon or oil, said oil containing metals commonly found in petroleum, said catalyst being suitable for high gasoline production, under catalytic cracking conditions suited to produce high gasoline yields, modified with an amount of potassium sufficient to cause appreciable increase in hydrogen produced when said catalyst is employed for cracking of said hydrocarbon or oil but insufficient to cause any substantial loss in gasoline yield when cracking under said conditions, the potassium being added to the catalyst in the range of from about 0.01 to about 0.5 weight percent, calculated as the element.

4,331,564

CATALYZING THE SULFURIZATION OF OLEFINS BY TERTIARY PHOSPHINES, AND AN OIL BASED MATERIAL CONTAINING AN ADDITIVE AMOUNT OF A SULFURIZED OLEFIN SO PRODUCED

Karl P. Kammann, Jr., Crown Point, and Astrid-Ilsaabe Phillips, Hammond, both of Ind., assignors to Ferro Corporation, Cleveland, Ohio

Filed Oct. 15, 1980, Ser. No. 197,182

Int. Cl.³ C10M 1/38; C07G 17/00

U.S. Cl. 252—45 16 Claims

1. In the catalytic sulfurization of olefins by the mixing of said olefin with elemental sulfur, the improvement comprising using as the catalyst a tertiary phosphine selected from the group consisting of a trihydrocarbyl phosphine and a trihydrocarbyl phosphine sulfide.

16. An oil based material containing an additive amount of a sulfurized olefin produced in accordance with the process of claim 1.

4,331,565

METHOD FOR FORMING HIGH SURFACE AREA CATALYST CARRIER AND CATALYST USING SAME

Carl F. Schaefer, Flint, and Raymond E. Bedford, Burton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1980, Ser. No. 211,371

Int. Cl.³ B01J 21/04, 23/10, 23/42, 23/44

U.S. Cl. 252—462 6 Claims

1. A thermally-stable high surface-area catalyst carrier consisting essentially of active alumina granules on which there is coated the hydrated oxide of cerium, said coated alumina resulting from precipitation of the hydrated oxide of cerium from an aqueous slurry of the alumina granules and of water soluble salts of cerium, the resulting precipitate being separated and treated to remove the residual soluble salts resulting from the precipitation of $Ce(OH)_3$ and being heated to remove the free water therefrom.

4,331,566

CATALYST FOR HYDRODEALKYLATION PROCESS

Geir Bjornson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 66,585, Aug. 14, 1979, abandoned, which is a division of Ser. No. 902,651, May 4, 1978, Pat. No. 4,191,844. This application Feb. 5, 1981, Ser. No. 232,058

Int. Cl.³ B01J 21/04, 21/12, 23/78, 23/84

U.S. Cl. 252—466 J 16 Claims

1. A catalyst consisting essentially of:

(a) about 1–35 weight percent manganese oxide,

(b) about 1–25 weight percent of a Group VIII metal oxide, and the balance being a mixture of
(c) a Group IIA metal oxide carrier, and
(d) a carrier containing alumina or silica-alumina containing a major amount of alumina.

4,331,567

PROCESS FOR PREPARING CATALYSTS BASED ON MOLYBDENUM AND IRON OXIDES

Roberto Canavesi, Bollate; Ferdinando Ligorati, Usmate; Roberto Ghezzi, Cusano Milanino, and Roberto Clemente, Milan, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Dec. 19, 1980, Ser. No. 218,224
Claims priority, application Italy, Dec. 19, 1979, 28218 A/79; Dec. 19, 1979, 28224 A/79
Int. Cl.³ B01J *23/88*
U.S. Cl. 252—470 **16 Claims**

1. In a process for preparing a catalyst based on molybdenum and iron oxides and active in the oxidation of methanol to formaldehyde, comprising precipitating said oxides in an aqueous medium from a soluble molybdenum compound and a soluble ferric salt, separating the precipitate from its mother waters and washing said precipitate with deionized water, and processing the washed precipitate to obtain the final active catalyst, the improvement which comprises:

contacting the said mother waters and/or the washing waters of the precipitate with a weak anionic exchange resin salified with an acid, thus to fix on said resin molybdic ions present in said waters; and

recovering said molybdic ions fixed on the resin in the form of an aqueous solution of alkali metal molybdate by contacting said anionic resin with an aqueous solution of alkali metal hydroxide.

4,331,568

3,7-DIMETHYL-3-HYDROXY-6-OCTENENITRILE AND PROCESS FOR ITS PREPARATION

Aldo Prevedello, and Edoardo Platone, both of San Donato, Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 831,057, Sep. 6, 1977, which is a continuation-in-part of Ser. No. 627,350, Oct. 30, 1975, abandoned. This application Mar. 21, 1978, Ser. No. 888,533
Claims priority, application Italy, Oct. 30, 1974, 28955 A/74
Int. Cl.³ A61K *7/46*; C07C *121/34, 120/00, 121/30*
U.S. Cl. 252—522 R **6 Claims**

1. A composition which comprises a perfume and an amount of 3,7-dimethyl-3-hydroxy-6-octenenitrile which is sufficient to stabilize the scent of said perfume.

4,331,569

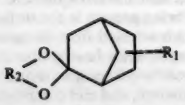
SUBSTITUTED NORBORNANONE ACETALS, PROCESS FOR PREPARING THE SAME, AND PERFUME COMPOSITIONS CONTAINING THE SAME

Yoshiharu Inoue, Ohsaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Ohsaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Dec. 29, 1980, Ser. No. 220,528
Claims priority, application Japan, Dec. 29, 1979, 54-172063; Feb. 21, 1980, 55-6060; May 13, 1980, 55-63116; May 14, 1980, 55-63677
Int. Cl.³ A61K *7/46*; C07D *319/04, 317/10*
U.S. Cl. 252—522 R **18 Claims**

1. A compound represented by the general formula:

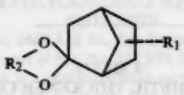
(I)



(wherein R_1 is an alkenyl group having 2 or 3 carbon atoms or an alkylidene group having 1 to 3 carbon atoms and R_2 is the saturated hydrocarbon group having 2 to 7 carbon atoms, with a dotted line between the two carbon atoms indicating a single bond when R_1 is an alkenyl group and a double bond when R_1 is alkylidene group).

17. A perfume composition containing as a perfume active constituent a compound of the general formula (I):

(I)



(wherein R_1 is an alkenyl group having 2 or 3 carbon atoms or an alkylidene group having 1 to 3 carbon atoms and R_2 is a saturated hydrocarbon group having 2 to 7 carbon atoms, with the dotted line between the two carbon atoms indicating a single bond when R_1 is an alkenyl group and a double bond when R_1 is an alkylidene group and a conventional adjuvant).

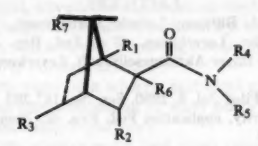
4,331,570

CARBOAMIDOALKYL NORBORNANES AND ORGANOLEPTIC USE IN PERFUMES

Philip T. Klemarczyk, Old Bridge; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown, and Domenick Laccarelli, Jr., Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,632, Nov. 13, 1980, which is a continuation-in-part of Ser. No. 152,188, Jul. 17, 1980, abandoned. This application May 28, 1981, Ser. No. 267,844
Int. Cl.³ A61K *7/22*
U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one norbornane derivative defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and wherein R_2 is methyl or hydrogen; R_6 is methyl or hydrogen; R_1, R_3, or R_7 represent methyl or hydrogen, with the proviso that one of R_1, R_3, and R_7 represents methyl and the other two of R_1, R_3, and R_7 represent hydrogen; wherein R_4 and R_5 are the same or different and each represents hydrogen or C_1–C_3 lower alkyl.

4,331,571

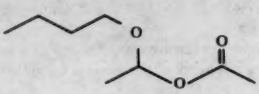
1-N-BUTOXY-1-ETHANOL ACETATE USEFUL FOR AUGMENTING OR ENHANCING THE AROMA OF PERFUME MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 217,810, Dec. 18, 1980, Pat. No. 4,296,138, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 29, 1981, Ser. No. 287,934
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising adding to a perfume composition, or cologne base, an organoleptic property-

modifying, augmenting or enhancing quantity of 1-n-butoxy-1-ethanol acetate having the structure:



4,331,572

EFFICIENT SYNTHETIC THICKENER COMPOSITION

Thomas G. Tomasi, Foster, and Marilyn A. Bell, Cranston, both of R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 16, 1979, Ser. No. 85,350
Int. Cl.³ C08L 33/02
U.S. Cl. 524—238 20 Claims

1. A thickener composition comprising:

(a) about 30 to 70 percent of a hydrocarbon solvent or mixture of solvents having a kauri-butanol value of 25–98;

(b) about 20 to 50 percent of a high molecular weight carboxyvinyl polymer, said polymer having a molecular weight of 750,000 to 1,500,000 and comprising a water-soluble polymer of acrylic acid cross-linked with about 0.5 to 2.0 percent of a polyallyl ether of sucrose having from four to eight allyl groups for each sucrose molecule; and

(c) about 3 to 8 percent of a cationic surfactant, which surfactant is derived from a fatty acid amine or diamine having from 12 to 22 carbon atoms, or the base amine of said surfactant.

4,331,573

AQUEOUS DISPERSIONS OF URETHANE-MODIFIED POLYESTERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE FOR THE PRODUCTION OF LACQUERS

Karl Zabrocki, Büttgen; Ludwig Bottenbruch, Krefeld, and Franz Weider, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,203
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928552
Int. Cl.³ C08L 91/00
U.S. Cl. 524—199 8 Claims

1. An aqueous dispersion of a urethane-modified polyester characterized in that it comprises:

(I) from 25 to 60% by weight of a urethane-modified oligoester and/or polyester of the alkyd type having a molecular weight of less than 5,000 and an acid number of 10 to 40 and containing less than 1% by weight, based on (I) of urea groups, (I) being obtainable by reacting a urethane-modified oligoester and/or polyester having an acid number of less than 10 and an OH-number of from 30 to 500 with a dicarboxylic acid anhydride and/or a tricarboxylic acid anhydride;

(IIa) from 0.02 to 4% by weight of at least one non-ionic emulsifier having a calculated HLB-value of from 10 to 20;

(IIb) from 0.02 to 4% by weight of at least one polyether-modified polyester emulsifier resin which contains from 10 to 50% by weight of co-condensed polyalkylene glycol residues and

(III) from 32 to 75% by weight of aqueous phase containing from 30 to 150% by weight of the quantity of alkali, ammonia or amine sufficient for completely neutralizing the carboxyl groups of polyesters (I) and (IIb).

4,331,574

PROCESS FOR PREPARATION OF WATER-THINNABLE EPOXY RESINS

Jurrianus Bekooij; Werner T. Raudenbusch, and Stephen A. Stachowiak, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 6, 1981, Ser. No. 241,163
Claims priority, application United Kingdom, Apr. 25, 1980, 8013744
Int. Cl.³ C09D 3/52, 3/58, 5/40
U.S. Cl. 525—530 12 Claims

1. A process for the preparation of carboxyl-containing resinous compounds, suitable for making water-dilutable coating compositions after at least partial neutralization with a base, which comprises reacting a non-acidic hydroxyl-containing resinous intermediate with a polycarboxylic acid anhydride at a temperature up to about 150° C., wherein said resinous intermediate is prepared by reacting below about 150° C. in the presence of an esterification catalyst, in at least one step (a) a diglycidyl ether of a dihydric phenol having a weight per epoxide (WPE) not exceeding 600 with (b) a hydroxylalkane monocarboxylic acid and (c) dimerized unsaturated fatty acids in an epoxy or acidic equivalent ratio of (a), (b) and (c) from $x/2/(x-2)$ to $(x+0.1x)/2/(x-2)$, wherein $x=4$ for a diglycidyl ether having a WPE of from about 400 to 550 and $x=6$ to 8 for a diglycidyl ether having a WPE of from about 170 to 250, said resinous intermediate being reacted with said polycarboxylic acid anhydride in an amount to produce a half-ester having an acid value of from about 5 to 35 mg KOH/g.

4,331,575

DRIER SYSTEMS AND SURFACE-COATING COMPOSITIONS CONTAINING SAME

Martin L. Feldman, East Brunswick, and Marvin Landau, North Bergen, both of N.J., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 901,153, Apr. 28, 1978, abandoned. This application Apr. 1, 1981, Ser. No. 249,758
Int. Cl.³ C09D 3/26, 3/64; C09F 9/00
U.S. Cl. 106—264 16 Claims

1. A drier system for surface-coating compositions that contain oxidizable, organic, film-forming resinous vehicles and that air dry in 24 hours or less at temperatures not higher than 50° F. and relative humidities above 50% that comprises a metal salt component containing

(a) a minor amount of cobalt and

(b) a major amount of auxiliary drier metal that contains 10% to 100% by weight of bismuth and 0 to 90% by weight of a metal selected from the group consisting of calcium, barium, zinc, zirconium, lead, and mixtures thereof, said cobalt and auxiliary drier metal being present as salts of acids selected from the group consisting of aliphatic monocarboxylic acids having 6 to 22 carbon atoms, cycloaliphatic monocarboxylic acids having 6 to 10 carbon atoms, and mixtures thereof; and

an inert, non-polar organic solvent.

8. A surface-coating composition that air dries in 24 hours or less at temperatures not higher than 50° F. and relative humidities above 50% that comprises an oxidizable, organic, film-forming resinous vehicle; 0.02% to 0.2%, based on the weight of vehicle solids, of cobalt; and 0.05% to 0.50%, based on the weight of vehicle solids, of auxiliary drier metal that contains 10% to 100% by weight of bismuth and 0 to 90% by weight of a metal selected from the group consisting of calcium, barium, zinc, zirconium, lead, and mixtures thereof, said cobalt and auxiliary drier metal being present in the surface-coating composition as salts of acids selected from the group consisting of aliphatic monocarboxylic acids having 6 to 22 carbon atoms, cycloaliphatic monocarboxylic acids having 6 to 10 carbon atoms, and mixtures thereof, and said composition containing a larger percentage by weight of said auxiliary drier metal than of cobalt.

4,331,576

WATER-SOLUBLE, PRESSURE-SENSITIVE, HOT-MELT ADHESIVES

Herman Colon, 2 Sobrisco St., Monsey, N.Y. 10952, and Albert Maletsky, 732 Iron Latch Rd., Franklin Lakes, N.J. 07417

Filed Jan. 29, 1981, Ser. No. 229,467
Int. Cl.³ C09J 3/14, 7/02
U.S. Cl. 524—271 4 Claims

1. A water-soluble, pressure-sensitive, hot-melt adhesive composition comprising:

(a) 30 to 65 wt.% of total polymer components; said polymer components comprising 35 to 100 wt.% of water-sensitive vinyl pyrrolidone/vinyl acetate copolymers, any balance comprising polymers selected from the group consisting of vinyl pyrrolidone homopolymers, low amine number (10–28) polyamides, polyamides with acid numbers in the range 80 to 140 and ethylene/vinyl acetate copolymers containing 17 to 50 wt.% of vinyl acetate;

(b) 35 to 50 wt.% of at least one free monobasic saturated or unsaturated fatty acid having an acid number higher than 137; and

(c) the balance being selected from the group of tall oils, rosin acids, anti-oxidants, and plasticizers for said polymers.

4,331,577

LATEX POLYMERIZATION PROCESS

Russell Hanna, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 80,068, Sep. 28, 1979, abandoned. This application Nov. 26, 1980, Ser. No. 210,732
Int. Cl.³ C08F 2/24
U.S. Cl. 524—819 3 Claims

1. In a method for controlling reactor pressure and free monomers content in the reactor during an emulsion polymerization reaction for the production of aqueous latex compositions, which method comprises the steps of:

(a) charging to a reactor an initial reactor charge comprising water or a mixture thereof with one or more additives of the group comprising protective colloid, surfce active agent, buffer, reductant or oxidant, activator, polymerizable ethylenically unsaturated monomer, wherein said monomer comprises up to about 75 weight percent of said initial reactor charge;

(b) purging said reactor of atmospheric gases and sealing said reactor;

(c) introducing an initial portion of a monomers feed mixture to the initial reactor charge, said monomers feed mixture comprising, by weight, from about 40 to about 99 percent vinyl chloride, vinyl acetate or mixtures thereof, from about 1 to about 30 percent ethylene dissolved therein and from 0 to 20 percent of one or more other polymerizable vinyl monomer, said initial portion comprising from 0 to about 30 percent of the total amount of the monomers feed mixture added to the reactor during the course of the polymerization reaction;

(d) introducing oxidant solution or reductant solution or both to the reactor contents at a feed rate whereby the polymerization reaction is initiated and thereafter commencing the addition of monomers feed mixture to the reactor contents;

the improvement of adding the monomers feed mixture defined in (c) in step (d) of the process to the reactor contents at a controlled feed rate at a preselected reaction temperature within the range of from about 30° to 80° C. to attain and maintain a preselected reactor pressure within the range of from 50 psig to 2,000 psig, said feed rate controlled by response to the preselected reactor pressure at which the polymerization is carried out and continued at the controlled rate to maintain and control said preselected reaction temperature and said preselected reaction pressure while simultaneously maintaining an essentially monomers unsaturated condition in the aqueous phase of the reaction mixture, whereby the concentration of each monomer in the aqueous phase of the reaction mixture is below its saturation point and whereby the polymer molecules produced in the aquoeus emulsion have essentially the same composition as the composition of the monomers feed mixture added to the reactor, and thereafter recovering the aqueous latex emulsion produced.

4,331,578

PROCESS FOR THE PRODUCTION OF VINYL POLYMER-POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 191,375, Sep. 29, 1980, Pat. No. 4,282,129, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908. This application Jul. 28, 1981, Ser. No. 287,589
Int. Cl.³ C09K 3/00; C08J 3/06, 3/08
U.S. Cl. 524—791 13 Claims

1. The process for the production of a stable vinyl polymer-polyol-alkali metal silicate emulsion by mixing the following components at a temperature and pressure wherein the components are in a liquid state or pressurized state:

(a) Aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) Polyol, 25 parts by weight;

(c) Organic acid, 1% to 5% by weight, percentage based on weight of alkali metal silicate solution;

(d) Vinyl monomer, 1 to 50 parts by weight;

(e) Peroxide initiator, a catalytic amount.

4,331,579

ADHESIVE TO ADHERE IMPERVIOUS AND FELT BACKED VINYL SHEET MATERIAL TO DAMP CONCRETE

Laurence F. Haemer, Newtown, Pa., assignor to Congoleum Corporation, Kearny, N.J.

Continuation-in-part of Ser. No. 81,758, Oct. 4, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,899
Int. Cl.³ C08K 5/10, 5/15
U.S. Cl. 524—5 3 Claims

1. A one-part, solvent-based, plasticized vinyl resin adhesive for securing impervious and felt backed vinyl sheet material to a subsurface, said adhesive consisting essentially of:

25% to 60% Portland cement;

5% to 30% vinyl resin wherein said vinyl resin is selected from the group consisting of vinyl halide homopolymer and vinyl halide copolymer;

5% to 30% plasticizer for said vinyl resin wherein said plasticizer is selected from the group consisting of: phthalate esters of 4 to 10 carbon straight chain and branched chain aliphatic alcohols, diethylene glycol dibenzoate, butyl benzyl phthalate, butadieneacrylonitrile copolymer, ethylene-vinyl acetate copolymer, polyesters, and thermoplastic polyester urethanes; and,

35% to 65% solvent for said vinyl resin, said solvent being selected from the group consisting of: tetrahydrofuran, cyclohexanone, methyl ethyl ketone, methyl isobutyl ketone, diacetone alcohol, isophorone, acetone, nitrobenzene 2-nitro propane, dichlorethane, dioxane, dimethyl formamide, and N-methyl-2-pyrrolidone.

4,331,580

FLOWABLE ANAEROBIC SEALANT COMPOSITION

James L. Bunyan, Akron, Ohio, assignor to Cajon Company, Macendonia, Ohio

Filed Apr. 11, 1980, Ser. No. 139,634
Int. Cl.³ C08K 5/10
U.S. Cl. 523—176 2 Claims

1. A flowable anaerobic sealant composition which is adapted to be applied to a threaded article and which is characterized by its ability to remain stable for an extended period of

time prior to solidifying and which upon solidifying is non-brittle which comprises:

(a) a polymerizable acrylate ester monomer;

(b) a hydroperoxide polymerization catalyst for said acrylate ester monomer in an amount sufficient to cause said monomer to polymerize under anaerobic conditions;

(c) a quinone polymerization inhibitor in an amount sufficient to prevent said monomer from polymerizing when standing for long periods of time;

(d) an organic sulfimide accelerator in an amount sufficient to increase the rate of polymerization of said monomer under anaerobic conditions;

(e) a thickening agent in an amount sufficient to render said sealant composition flowable at room temperature;

(f) a coloring agent in an amount sufficient to render said sealant composition non-transparent;

(g) a viscosity controlling agent in an amount sufficient to cause said sealant composition to flow into voids in threads when applied thereto;

(h) an effective amount of tetrafluorethylene polymer as an anti-galling agent; and

(i) a plasticizer in an amount sufficient to render the solidified composition non-brittle, with said plasticizer being at least one compound selected from the group consisting of glycerides and derivatives thereof.

4,331,581
ELASTOSOL PASTES

Sol Davison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,215
Int. Cl.³ C08K 5/07
U.S. Cl. 524—364 **7 Claims**

1. A process for preparing a paste suitable for the preparation of dispersions and coatings comprising:

(a) dissolving a block copolymer in a first solvent where said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B and said first solvent dissolves both the A blocks and the B blocks and has a Hildebrand's solubility parameter within the range of about 7 to about 9.2 $(cal/cm^3)^{\frac{1}{2}}$;

(b) adding a second solvent to the solution of step a), wherein said second solvent is a good solvent for the A block and a poor solvent for the B block, and said second solvent has a Hildebrand's solubility parameter within the range of about 9.2 to about 10 $(cal/cm^3)^{\frac{1}{2}}$, therein resulting in the precipitation of the midblocks B and the formation of a suspension of micelles; and

(c) adding a third solvent to the suspension of micelles formed in step (b), wherein the third solvent is a poor solvent for both the end blocks A and the midblocks B, and has a Hildebrand's solubility parameter greater than about 10 $(cal/cm^3)^{\frac{1}{2}}$, therein precipitating an elastosol plate.

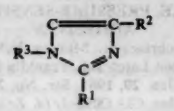
4,331,582
EPOXY LATENT CATALYST

Eduard P. Babayan, Huntington Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Jan. 14, 1980, Ser. No. 111,936
Int. Cl.³ C08G 59/68
U.S. Cl. 523—453 **14 Claims**

1. A curable composition having an extended pot life at temperatures below 200 degrees F. comprising:

0.25% to 10% by weight of a half-salt of an imidazole and a strong aromatic acid soluble in epoxy selected from benzene sulfonic acid or alkylated benzene sulfonic acid containing 1 to 3 C_1 to C_8 alkyl groups, said imidazole being selected from compounds of the formula;



where R^1, R^2 and R^3 are selected from hydrogen, alkyl, aralkyl, hydroxyalkyl, cyanoalkyl and phenyl;

10% to 35% by weight of a diamino-diphenyl sulfone; and remainder being an organic material containing a plurality of epoxy groups.

4,331,583
CATALYSTS FOR FOUNDRY CORE BINDERS

George S. Everett, Clarendon Hills, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 234,905
Int. Cl.³ C08L 61/06
U.S. Cl. 523—144 **11 Claims**

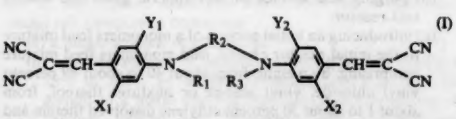
1. A method of preparing a core sand material adapted for the rapid manufacture of resin bound sand shapes, said method including treating a core sand material with a catalyst which comprises the reaction product of polyphosphoric acid and an alcohol and thoroughly mixing said treated core sand material with an acid curable thermosetting resin binder material to provide a curable core sand material.

4,331,584
STYRYL COMPOUNDS AND COLORING SYNTHETIC RESINS THEREWITH

Masao Nishikuri, Hirakata; Michio Yamazaki; Kiyoteru Kojima, both of Toyonaka; Junzaburo Seino, Kishiwada, and Hirohito Kenmochi, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 23, 1980, Ser. No. 152,611
Claims priority, application Japan, Jun. 4, 1979, 54-70368; Jun. 6, 1979, 54-71664; Jul. 2, 1979, 54-84334
Int. Cl.³ C09B 23/14; C07C 121/78
U.S. Cl. 524—206 **7 Claims**

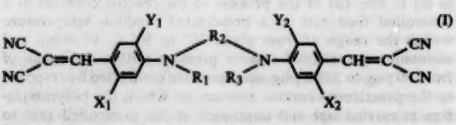
1. A styryl compound represented by the formula (I):



(I)

wherein X_1 is a halogen atom or a lower alkyl or lower alkoxy group, X_2, Y_1 and Y_2 are each a hydrogen or halogen atom or a lower alkyl or lower alkoxy group, R_1 and R_3 are each an unsubstituted or substituted alkyl group, and R_2 is a straight or branched C_3–C_{10} alkylene group or an alicyclic hydrocarbon-containing alkylene group.

7. A process for coloring synthetic resins which comprises adding and mixing, into a synthetic resin, a styryl compound represented by the formula (I):



(I)

wherein X_1 is a halogen atom or a lower alkyl or lower alkoxy group, X_2, Y_1 and Y_2 are each a hydrogen or halogen atom or a lower alkyl or lower alkoxy group, R_1 and R_3 are each an unsubstituted or substituted alkyl group, and R_2 is a straight or

branched C_3–C_{10} alkylene group or an alicyclic hydrocarbon-containing alkylene group.

4,331,585

LIGHT-STABLE POLYPROPYLENE COMPOSITIONS

Leo L. Valdiserri, Belpre, Ohio, and Elyse M. Bullock, Parkersburg, W. Va., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation of Ser. No. 3,675, Jan. 15, 1979, abandoned. This application May 23, 1980, Ser. No. 152,468

Int. Cl.[3] C08K *5/34, 5/52*

U.S. Cl. 524—103 3 Claims

1. A light-stable polypropylene fiber composition consisting essentially of polypropylene and minor proportions sufficient to improve the light stability of said polypropylene of each of (1) either bis-(2,2,6,6-tetramethyl-4-piperidyl) sebacate or tris-(2,2,6,6-tetramethyl-4-piperidyl) nitriloacetate, and (2) a pentaerythritol polyphosphite.

4,331,586

NOVEL LIGHT STABILIZERS FOR POLYMERS

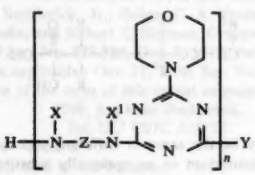
William B. Hardy, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,882

Int. Cl.[3] C07D *401/14;* C08K *5/35*

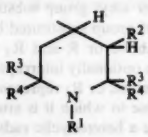
U.S. Cl. 525—186 12 Claims

1. An oligomer of the formula (I)



(I)

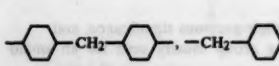
wherein X and X^1, which are the same or different, represent hydrogen, C_1–C_{20} alkyl, or the radical (II)



(II)

wherein R^1 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4, which are the same or different, represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; Z represents C_2–C_{20} alkylene, either straight-chained or branched, wherein the alkylene chain is optionally interrupted by oxy, thio, or

radicals, wherein R^5 represents hydrogen, C_1–C_{20} alkyl, or the radical (II); C_5–C_{10} cycloalkylene,



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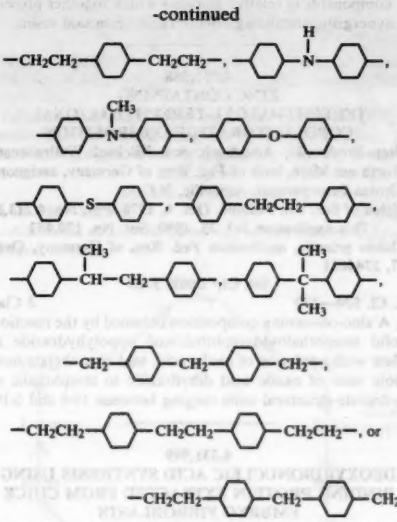
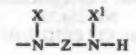


C_6–C_{12} arylene, or C_8–C_{14} aralkylene; n is an integer greater than 1; and, Y represents a halogen atom, C_1–C_8 alkylamino, di(C_1–C_8)alkylamino, pyrrolidyl, morpholino, or



wherein X, X^1, and Z are as previously defined; with the proviso that at least one piperidinyl moiety of formula (II) is present in the repeating unit.

6. A method for stabilizing a polymer which is normally subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultra-violet stabilizingly effective amount of an oligomer of claim 1.

4,331,587

RESIN STABILIZER SYSTEMS OF ORGANOTIN SULFUR-CONTAINING COMPOUNDS AND METAL COMPOUNDS

Thomas C. Jennings, Lyndhurst, and Charles W. Fletcher, Jr., Highland Heights, both of Ohio, assignors to Dart Industries, Inc., Northbrook, Ill.

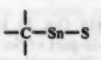
Division of Ser. No. 353,910, Apr. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 116,671, Feb. 18, 1971, Pat. No. 3,764,571. This application Nov. 29, 1979, Ser. No. 98,679

Int. Cl.[3] C08K *5/58*

U.S. Cl. 524—181 13 Claims

4. A vinyl halide resin composition which comprises a vinyl halide resin and, as a heat stabilizer, an effective amount of a composition consisting essentially of,

an organotin sulfur-containing compound having a



group, and

a metal compound selected from the group consisting of an alkali metal bisulfite, metabisulfite and mixtures of said metal compounds, said organotin and metal compound

components in relative amounts which together provide a synergistic stabilizing effectiveness upon said resin.

4,331,588

ZINC CONTAINING TEREPHTHALOYL-TEREPHTHAL/OXAL COPOLYHYDRAZIDE COMPOSITION

Walter Brodowski, Amorbach, and Michael Wallrabenstein, Worth am Main, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 948,494, Oct. 4, 1978, Pat. No. 4,213,890. This application Jul. 21, 1980, Ser. No. 170,452

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744621

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—439 **3 Claims**

1. A zinc-containing composition obtained by the reaction of a solid terephthaloyl-terephthal/oxal copolyhydrazide zinc chelate with a solution of oxalic acid, said zinc chelate having a mole ratio of oxalic acid dihydrazide to terephthalic acid dihydrazide structural units ranging between 19:6 and 6:19.

4,331,589

DEOXYRIBONUCLEIC ACID SYNTHESIS USING BINDING PROTEIN EXTRACTED FROM CHICK EMBRYO FIBROBLASTS

Paul P. Hung, Waukegan, and Shaw-Guang Lee, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 112,267, Jan. 5, 1980, abandoned, which is a division of Ser. No. 963,245, Nov. 22, 1978, Pat. No. 4,224,408. This application Apr. 16, 1981, Ser. No. 254,726

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **1 Claim**

1. In the improved method of isolating nucleic acid binding protein from Rous sarcoma virus transformed or nontransformed chick embryonic fibroblast cells, said method comprising:

sonicating said cells;

separating the supernatant from the sonicated cells;

passing the supernatant through an affinity column comprising DNA to absorb the binding protein;

eluting the binding protein with a salt solution;

the improvement which consists essentially of further purifying the binding protein by ion exchange chromatography comprising first passing the eluate through a diethylaminoethyl cellulose column to absorb nucleases, undesired enzymes, and other binding protein unrelated to the desired protein and obtain a leak-through, and then subsequently passing the leak-through material through a carboxymethyl cellulose column to absorb the nucleic acid binding protein and other unrelated binding proteins and then eluting the desired binding protein specifically with a salt solution.

4,331,590

β-GALACTOSYL-UMBELLIFERONE-LABELED PROTEIN AND POLYPEPTIDE CONJUGATES

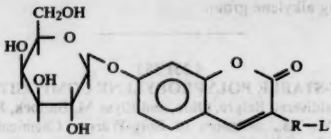
Robert C. Bocuslaski; John F. Burd, and Robert J. Carrico, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 87,819, Oct. 23, 1978, Pat. No. 4,279,992, which is a continuation-in-part of Ser. No. 886,094, Mar. 13, 1978, Pat. No. 4,226,978. This application May 6, 1980, Ser. No. 147,339

Int. Cl.³ A61K *39/385, 39/44;* C07G *7/00*

U.S. Cl. 260—112 B **4 Claims**

1. A β-galactosyl-umbelliferone-labeled conjugate of the formula:



wherein R is a linking group and L is a protein or polypeptide.

4,331,591

CHEMICAL PROCESS FOR THE PRODUCTION OF α-AMINOPHOSPHONIC ACIDS AND PEPTIDE DERIVATIVES

Eric K. Baylis, Stockport, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

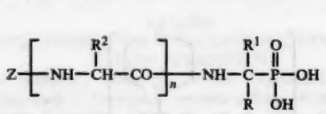
Filed Oct. 1, 1979, Ser. No. 80,763

Claims priority, application United Kingdom, Oct. 5, 1978, 39399/78

Int. Cl.³ C07C *103/52, 9/02;* C07G *7/00*

U.S. Cl. 260—112.5 R **12 Claims**

1. A process for the production of an α-aminophosphonic acid or a peptide derivative thereof of formula:



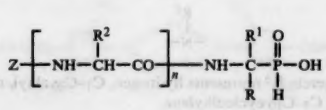
I

wherein

R and R_1 may be the same or different and each can be hydrogen, deuterium or an optionally substituted lower alkyl group, lower alkenyl, lower alkynyl, cycloalkyl, aryl or heterocyclic radical containing one or more oxygen, nitrogen or sulphur atoms and which may be fused to an aromatic ring, a lower alkyl group substituted by a cycloalkyl radical, a lower alkyl group substituted by an aryl radical, a lower alkyl group substituted by a heterocyclic radical as defined above or R and R_1 together form a polymethylene chain optionally interrupted by an oxygen, nitrogen or sulphur atom, or R_1 represents, together with the C(R)—N< residue to which it is attached, the atoms required to complete a heterocyclic radical; and

R_2 can be hydrogen, optionally substituted lower alkyl, cycloalkyl, aryl or lower alkyl substituted by a cycloalkyl radical, lower alkyl substituted by a heterocyclic radical containing one or more nitrogen atoms; by a heterocyclic radical containing one or more nitrogen atoms, or R_2 together with the C(H)—N residue to which it is attached, may represent the atoms required to complete a heterocyclic radical; and

n is 0, 1, 2, 3 or 4; comprising oxidising, using an oxidising agent, a compound having the formula:



II

wherein

R, R^1, R^2 and n have their previous significance, and

Z is H or a protecting group usually used for an amino group.

4,331,592

PROCESS FOR THE PREPARATION OF CARBOXYLIC ACID AMIDES AND PEPTIDES

Hans Wissmann, Bad Soden am Taunus, and Hans-Jerg Kleiner, Kronberg am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,458

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901843

Int. Cl.³ C07C *103/52, 125/06*

U.S. Cl. 260—112.5 R 3 Claims

1. The method of making a carboxylic acid amide which comprises reacting a compound having a free amino group with a compound having a free carboxyl group in the presence of an anhydride of an alkane phosphonic acid.

4,331,593

ANALGESIC COMPOUNDS

Edward L. Smithwick, Jr.; Robert C. A. Frederickson, both of Indianapolis, and Robert T. Shuman, Greenwood, all of Ind.

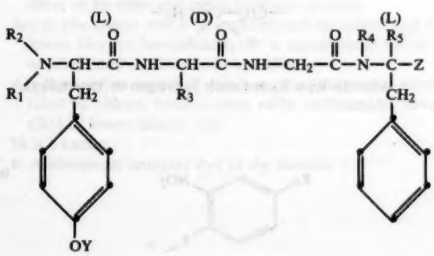
Division of Ser. No. 838,516, Oct. 3, 1977, Pat. No. 4,264,491. This application Oct. 31, 1980, Ser. No. 202,514

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 E 32 Claims

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D, when applicable, define the chirality;

R_1 and R_2 independently are hydrogen or C_1–C_3 primary alkyl;

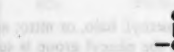
R_3 is C_1–C_4 primary or secondary alkyl or $—CH_2CH_2—S—CH_3$;

R_4 is hydrogen;

R_5 is hydrogen or C_1–C_3 primary alkyl;

Y is hydrogen or acetyl; and

Z is



$—CH_2OH$, or —CN.

4,331,594

A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION

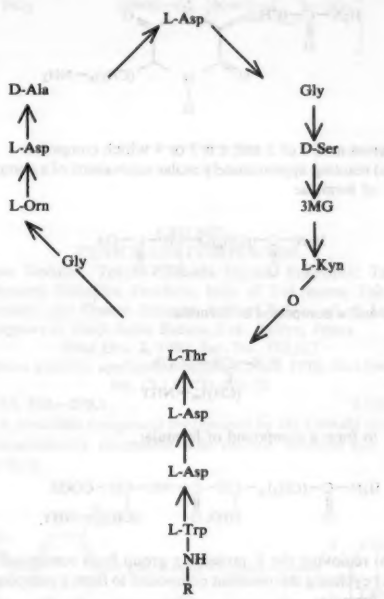
Robert L. Hamill, Greenwood, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 41,274, May 21, 1979, abandoned, which is a division of Ser. No. 951,695, Oct. 16, 1978, Pat. No. 4,208,403. This application Nov. 14, 1980, Ser. No. 206,749

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R 18 Claims

1. Antibiotic A-21978C factor C_0, which has the following structural formula:



wherein 3MG represents L-threo-3-methylglutamic acid, and R is a C_{10}-alkanoyl moiety; and which has:

(a) a molecular formula of approximately $C_{72}H_{100}N_{16}O_{27}$;

(b) a molecular weight of approximately 1622;

and which, in sodium salt form, has these characteristics:

(c) an approximate elemental composition of 52.07% carbon, 5.95% hydrogen, 12.73% nitrogen, 25.84% oxygen and 3.4% sodium;

(d) an infrared absorption spectrum in KBr pellet as shown in FIG. 5 of the drawings;

(e) upon hydrolysis yields the following amino acids: aspartic acid, glycine, alanine, serine, threonine, tryptophan, ornithine, kynurenine, and 3-methylglutamic acid;

(f) is soluble in methanol, ethanol, propanol, butanol, dimethylformamide, dimethyl sulfoxide, dioxane, tetrahydrofuran, and water and in acidic and alkaline solutions, except at pH levels of below about pH 3.5; but is only slightly soluble or is insoluble in acetone, chloroform, diethyl ether, benzene, ethyl acetate, and hydrocarbon solvents;

(g) an R_f value of approximately 0.71 on reversed-phase silica-gel TLC in water:methanol:acetonitrile (45:15:40) which contains 0.2% pyridine and 0.2% acetic acid; and

(h) the following specific rotation: $[\alpha]_D^{25}+11.9°$ (c 0.7, H_2O);

or a cationic or acid addition salt of A-21978 factor C_0.

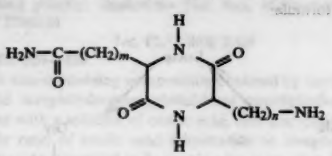
4,331,595

IMMUNOREGULATORY DIKETOPIPERAZINE COMPOUNDS

George Heavner, Flemington; Foe-Siong Tjoeng, Neshanic Station, and Gideon Goldstein, Short Hills, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 162,228, Jun. 23, 1980, Pat. No. 4,289,759.
This application Mar. 30, 1981, Ser. No. 248,758
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R 1 Claim

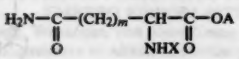
1. A method of preparing a chemical compound of formula:



(I)

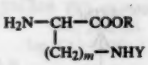
wherein m is 1 or 2 and n is 3 or 4 which comprises:

(a) reacting approximately molar equivalents of a compound of formula:



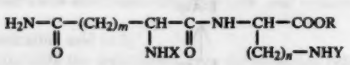
(II)

and a compound of formula:



(III)

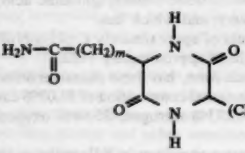
to form a compound of formula:



(IV)

(b) removing the X protecting group from compound (IV)

(c) cyclizing the resultant compound to form a compound of formula:



(IV)

and

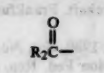
(d) removing the Y protecting group from compound (V), whereby compound (I) is formed;

wherein:

X and Y are each selected from the group consisting of:

(a)

wherein R_1 is phenyl; tolyl; xylyl; adamantyl; allyl; beta-cyanoethyl; fluoroenylmethyl; benzyl, benzyl wherein the phenyl ring is substituted with from one to three members selected from halo, nitro, loweralkyl, and loweralkoxy, diisopropylmethyl; diphenylmethyl; cyclohexyl; cyclopentyl, vinyl; t-butyl; t-amyl, dimethyltrifluoromethylmethyl; or dimethylbiphenylmethyl;

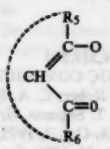


(b)

wherein R_2 is loweralkyl of two to four carbons or loweralkyl of one to four carbons substituted with from one to five halo groups;

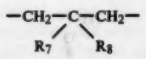
(c)

wherein V is S or O and R_3 and R_4 are each benzyl or loweralkyl;

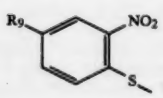


(d)

wherein R_5 and R_6 taken individually are each loweralkyl or nd R_5 and R_6 taken together is

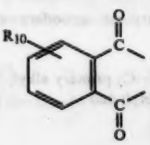


wherein R_7 a R_8 are each hydrogen or loweralkyl;



(e)

wherein R_9 is hydrogen or nitro; and



(f)

wherein R_{10} is hydrogen, methyl, halo, or nitro; and A is benzyl or benzyl in which the phenyl group is substituted with from one to three members each selected from halo, nitro, C_1–C_3 loweralkyl, and C_1–C_3 loweralkoxy.

4,331,596

ARYLAZOARYLAZO-SUBSTITUTED AZO, AZOMETHINE 1:2 CHROMIUM COMPLEX DYES

Fabio Beffa, Riehen, Switzerland, and Gerhard Back, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

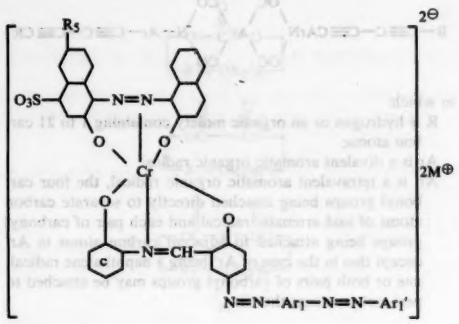
Continuation of Ser. No. 945,142, Sep. 22, 1978, abandoned, which is a continuation of Ser. No. 823,806, Aug. 11, 1977, abandoned, which is a continuation of Ser. No. 572,689, Apr. 29, 1975, abandoned. This application Dec. 11, 1979, Ser. No. 102,498

Claims priority, application Switzerland, May 9, 1974, 6369/74

Int. Cl.³ C09B 45/06, 45/16, 45/26; D06P 3/32

U.S. Cl. 260—145 A 10 Claims

1. A 1:2 chromium complex dye of the formula



wherein

R_5 is hydrogen or nitro,

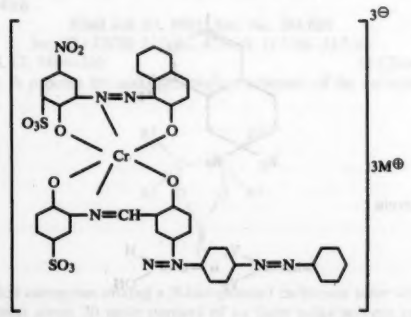
the benzene ring c is substituted by sulfo, methylsulfonyl or nitro; or by nitro and methylsulfonyl or sulfo,

Ar_1 is phenylene which is unsubstituted or substituted by lower alkyl or lower alkoxy or is naphthylene which is unsubstituted or substituted by sulfo,

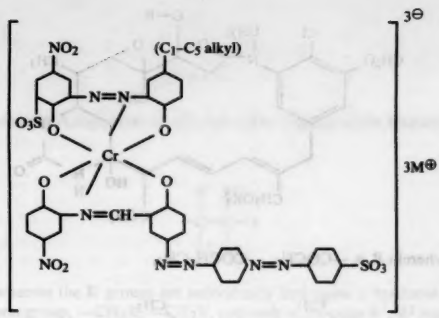
Ar_1' is phenyl or naphthyl which are unsubstituted or substituted by chloro, bromo, nitro, sulfo, sulfonamido, lower alkyl or lower alkoxy, and

M is a cation.

6. A chromium complex dye of the formula



9. A 1:2 chromium complex dye of the formula



4,331,597

PENICILLIN COMPOUNDS

Osamu Makabe, Tokyo; Yasushi Mursi, Yokosuka; Tuneo Okonogi; Masahiro Onodera, both of Yokohama; Takashi Yoshida, and Shunzo Fukatsu, both of Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

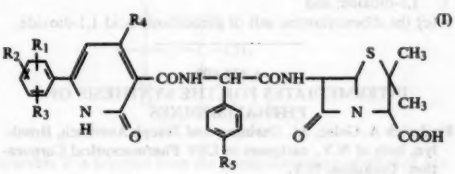
Filed Oct. 2, 1980, Ser. No. 193,317

Claims priority, application Japan, Oct. 2, 1979, 54-126410

Int. Cl.³ C07D 499/70

U.S. Cl. 260—239.1 5 Claims

1. A penicillin compound represented by the formula (I) and pharmaceutically acceptable salts thereof, wherein said formula (I) is



wherein R_1, R_2, and R_3 each represents hydrogen, a lower alkyl group, a halogen atom, a lower alkoxy group, a hydroxyl group, or a substituted or unsubstituted phenylalkoxy group, except that R_1, R_2, and R_3 cannot all represent hydrogen simultaneously; R_4 represents hydrogen or a lower alkyl group; and R_5 represents hydrogen or a hydroxyl group.

4,331,598

MAYTANSINOIDS

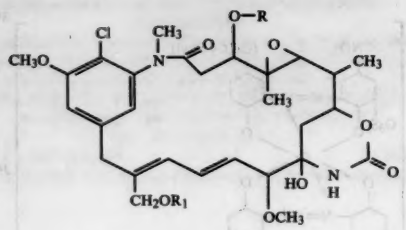
Toru Hasegawa, Kawanishi; Motowo Izawa, Amagasaki, and Seiichi Tanida, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 17, 1980, Ser. No. 188,242

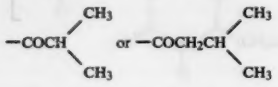
Int. Cl.³ C07D 498/18

U.S. Cl. 260—239.3 P 8 Claims

1. A compound of the formula:



wherein R is —$COCH_3$, —$COCH_2CH_3$,



and R_1 is hydrogen or R_2CO— in which R_2 is phenyl or alkyl of 1 to 5 carbon atoms, the alkyl being optionally substituted by phenyl.

4,331,599

SPARINGLY WATER-SOLUBLE SALTS OF PENICILLANIC ACID 1,1-DIOXIDE

William W. Armstrong, Mill Neck, N.Y.; Charles E. Moppett, Mystic, and Wendell W. Windisch, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,779
Int. Cl.³ C07D *499/14*
U.S. Cl. 260—245.2 R **2 Claims**

1. A compound selected from the group consisting of:
(a) the 1:2 N,N'-dibenzylethylenediamine salt of penicillanic acid 1,1-dioxide;
(b) the N-benzyl-2-phenylethylamine salt of penicillanic acid 1,1-dioxide; and
(c) the dibenzylamine salt of penicillanic acid 1,1-dioxide.

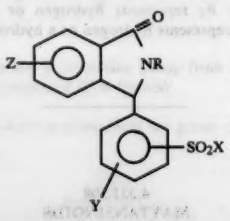
4,331,600

INTERMEDIATES FOR THE SYNTHESIS OF PHTHALIMIDINES

Frederick A. Golec, Jr., Ossining, and Joseph Auerbach, Brooklyn, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,812
Int. Cl.³ C07D *209/46, 265/02, 307/88*
U.S. Cl. 548—472 **6 Claims**

1. A compound of the formula:



wherein
Z is H, C_1–C_{10} alkyl, halo, C_1–C_{10} alkoxy, trifluoromethyl, hydroxy, C_1–C_{10} alkanoyloxy, or C_1–C_{10} alkanoylamino;
Y is H, C_1–C_{10} alkyl, halo, C_1–C_{10} alkoxy, trifluoromethyl, hydroxy, C_1–C_{10} alkanoyloxy, or C_1–C_{10} alkanoylamino;
X is F, Cl, Br or NR_1R_2 in which R_1 and R_2 are independently H, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl, C_3–C_{10} cycloalkyl, C_6–C_{10} aryl or C_7–C_{10} aralkyl; and
R is H, C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl or C_7–C_{10} aralkyl.

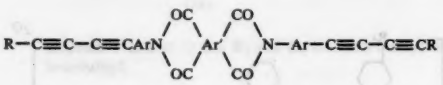
4,331,601

MONOMERIC DIIMIDES HAVING TERMINAL CONJUGATED DIACETYLENE GROUPS

Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Oct. 22, 1980, Ser. No. 199,606
Int. Cl.³ C07D *209/34, 471/00; C08F 22/40*
U.S. Cl. 548—461 **20 Claims**

1. A monomeric diimide of the formula:



in which:
R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;
Ar is a divalent aromatic organic radical;
Ar' is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar' except that in the case of Ar' being a naphthalene radical, one or both pairs of carbonyl groups may be attached to peri-carbon atoms therein.

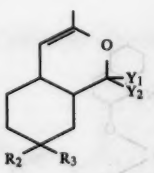
4,331,602

PHARMACOLOGICALLY ACTIVE 4-[2-HYDROXY-4-(SUBSTITUTED]PHENYL)NAPHTHALEN-2(1H)-ONES AND 2-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

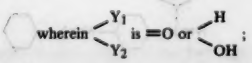
Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 189,402, Sep. 19, 1980, Pat. No. 4,285,867.
This application Mar. 16, 1981, Ser. No. 244,435
Int. Cl.³ C07D *323/00*
U.S. Cl. 549—337 **1 Claim**

1. A compound having the formula



wherein



R_2 and R_3 taken together are alkylenedioxy having from two to four carbon atoms.

4,331,603

PROCESS FOR IMPROVING THE FRAGRANCE PROPERTIES OF MACROCYCLIC COMPOUNDS OBTAINED BY THERMAL DEPOLYMERIZATION

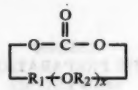
Eugene G. Harris, West Chester, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

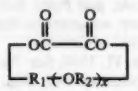
Continuation-in-part of Ser. No. 43,392, May 25, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,554

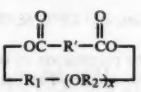
Int. Cl.³ C07D *321/12, 321/00, 323/00, 309/30*

U.S. Cl. 549—228 15 Claims

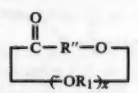
1. A process for improving the olfactory properties of macrocyclic fragrance compounds obtained by the catalytic thermal depolymerization of linear polyesters which comprises intimately contacting the macrocyclic compound maintained in a liquid state at a temperature up to 120° C. with at least 0.001 mole ozone per pound of macrocyclic compound said macrocyclic compound having 8 to 20 carbon atoms in the ring and having the formula:







or



where x is an integer from 0 to 4, R_1 and R_2 are saturated bivalent hydrocarbon radicals having 2 to 6 carbon atoms, and R′ and R″ are bivalent hydrocarbon radicals of the formula $-(-CR_3R_4-)_y-$ where y is an integer from 4 to 15 and R_3 and R_4 are hydrogen or a C_{1-4} alkyl group.

4,331,604

PREPARATION OF CYCLIC CARBONATES

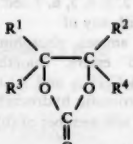
James M. Renga, and Roy A. Periana-Pillai, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1981, Ser. No. 284,036

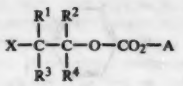
Int. Cl.³ C07D *317/36, 317/38, 317/44, 317/46*

U.S. Cl. 549—230 12 Claims

1. A process for making a cyclic carbonate of the formula



which comprises mixing a β-halogenated carbonate ester with at least about 20 mole percent of an inert polar solvent and heating the resulting mixture at about 100° C.-300° C., said β-halogenated carbonate ester having the formula



wherein A represents an alkyl group or a group of the formula

wherein the R groups are individually hydrogen, a hydrocarbon group, $-CH_2X$, $-CH_2Y$, and each of the pairs R^1, R^2 and R^5, R^6 may together form an alkylene group of 3–6 carbon atoms, each X is individually Cl, Br, or I, and Y is an alkoxy or aroxy group.

4,331,605

LACTONE RING CONTAINING SULFONIC ACID ESTERS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

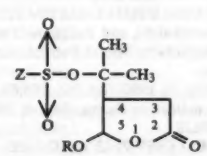
Filed Jul. 29, 1980, Ser. No. 173,402

Claims priority, application France, Aug. 10, 1979, 79 20477

Int. Cl.³ C07D *307/32*

U.S. Cl. 549—314 1 Claim

1. A sulfonic acid ester containing a lactone ring in the trans form in the 4 and 5 positions having (4SR, 5RS), (4S, 5R) or (4R, 5S) configuration of the formula



I

wherein Z is selected from the group consisting of alkyl of 1 to 4 carbon atoms and phenyl optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and nitro and R is selected from the group consisting of (3-phenoxyphenyl)-methyl and (1R,2S,5R)-2-isopropyl-5-methyl-cyclohexyl.

4,331,606

N-(SUBSTITUTED CHROMONE-3-CARBONYL)-PHENYLGLYCINE DERIVATIVES

Seiichiro Nomoto; Hironori Ikuta, both of Tokyo; Yoshimasa Machida, Wako; Shigeto Negi, Kodaira; Isao Sugiyama, Tokyo; Hiroshi Yamauchi, Gifu; Takeo Kanai, Honjo, and Isao Saito, Sakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

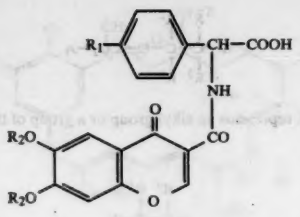
Filed Dec. 19, 1980, Ser. No. 218,404

Claims priority, application Japan, Aug. 11, 1980, 55/109161

Int. Cl.³ C07D *311/24*

U.S. Cl. 549—402 5 Claims

1. An N-(substituted chromone-3-carbonyl)phenylglycine derivative represented by the formula



in which R_1 represents a hydrogen atom or a hydroxyl group, and each R_2 represents a hydrogen atom, an alkoxycarbonyl group or a chlorine-substituted alkoxycarbonyl group.

4,331,607

PROCESS FOR THE PURIFICATION OF CHENODEOXYCHOLIC ACID

Antonio Bonaldi, Schilpario, and Egidio Molinari, Erba, both of Italy, assignors to Biasinachim S.p.A., Milan, Italy

Filed Jul. 11, 1980, Ser. No. 167,470

Claims priority, application Italy, Jul. 12, 1979, 24315 A/79

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.1 **5 Claims**

1. A process for preparing chenodeoxycholic acid substantially free from impurities and from solvents characterized in that crude chenodeoxycholic acid is subjected to crystallization from a solvent selected in the group consisting of mono- and poly-halogenated aliphatic hydrocarbons containing from 1 to 5 carbon atoms and that, if desired, the thus obtained product is dissolved in a water-miscible organic acid having low molecular weight and the thus obtained solution is poured into water, the precipitate is collected by filtration, washed with water and dried.

4,331,608

LIQUID PHASE CATALYTIC CO-OXIDATION PROCESS

Keiji Kawamoto, Hatsukaichi, and Toshihiro Yoshioka, Otake, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,673

Claims priority, application Japan, Jun. 6, 1979, 54/69867; Jun. 26, 1979, 54/79628

Int. Cl.³ C09F 7/02; C11C 3/00

U.S. Cl. 260—406 **14 Claims**

1. A process for preparing at least one cleavaged product of the unsaturated bond of an unsaturated compound having at least 4 carbon atoms, said process comprising the step of:

catalytically co-oxidizing (i) said unsaturated compound and (ii) an aldehyde in a liquid phase with a molecular oxygen-containing gas in the presence of a catalyst consisting essentially of ruthenium metal or a compound thereof, said aldehyde being present in the starting reaction mixture.

4,331,609

ANTIPERSPIRANT COMPOSITION

Thomas V. Orr, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 8, 1980, Ser. No. 184,862

Int. Cl.³ C07F 5/06

U.S. Cl. 260—448 R **31 Claims**

1. An antiperspirant complex comprising:

(a) as a first component, $Al(OH)_{6-n}X_n$ wherein n has a value of from about 0.80 to about 1.25 and X is selected from the group consisting of chlorine, bromine, iodine, sulfamate, sulfate, nitrate, and mixtures thereof;

(b) as a second component, $DO(OH)_{2-m}Y_m$ wherein m has a value of about 1.0, D is selected from the group consisting of zirconium, hafnium, and mixtures thereof, and Y is selected from the group consisting of chlorine, bromine, iodine, and mixtures thereof;

(c) as a third component, a water soluble neutral amino acid; and

(d) as a fourth component, an inorganic acidic compound selected from the group consisting of aluminum chloride, hydrochloric acid, and mixtures thereof,

wherein the molar ratio of total metal to non-hydroxy anion in said antiperspirant complex is less than about 1.3, the molar ratio of aluminum to non-aluminum metal in the complex is from about 2 to about 10, and the molar ratio of neutral amino acid to total metal in the complex is from about 0.09 to about 0.24.

4,331,610

PROCESS FOR THE PREPARATION OF CARBONIC ACID ESTERS

Walter Heitz, Kirchhain, and Peter Ball, Neu Otting, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

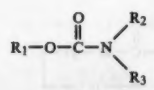
Filed Jan. 17, 1980, Ser. No. 112,894

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903507

Int. Cl.³ C07C 68/00

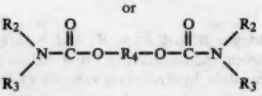
U.S. Cl. 260—463 **7 Claims**

1. A process for the preparation of carbonic acid esters of mono- or polyalcohols, characterized in that urethanes of the formula (Ia)



(Ia)

or



(Ib)

wherein R_1 is a primary alkyl of between 1 and 18 carbon atoms, R_2 and R_3 are hydrogen atoms and R_4 is a radical of a diprimary dialcohol having 2 to 20 carbon atoms are reacted with C_1–C_{20} monoalcohols or with C_5–C_{20} polyalcohols in a molar ratio of alcohol to urethane group of at least 1:1, in the presence of a catalyst in amounts of between 10^{-3} and 5 mol percent relative to the moles of said urethanes, selected from the group consisting of

(a) saltlike or covalent compounds of main groups 4, 5 and 6 of the periodic table of elements in combination with any of

(b) saltlike or covalent compounds of main groups 1 and 2 and subgroups 1, 2, 3, 4, 5, 6, 7 and 8 of the periodic table of elements or with any of

(c) orthostannates, amines, phosphines, phosphine oxides, phosphonic acid esters, thioethers, thiolates, $B(O{-}C_6H_5)_3$, $B(C_6H_5)_3$ and $AL(OR)_3$ where R is an aliphatic or an aromatic hydrocarbon radical;

(d) combinations of any member of (b) with any other of (b) or (c);

(e) combinations of any member of (c) with any other of (c), said combinations being characterized in that they are combinations of electron donors and electron acceptors by heating while stirring to at least 120° C. and by further heating to about 270° C. in the course of about 5 to 10 hours.

4,331,611

NITRILE AND USES OF SAME IN PERFUMES, COLOGNES AND PERFUMED ARTICLES

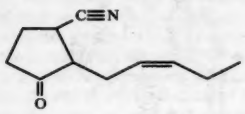
Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 106,158, Dec. 21, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,753

Int. Cl.³ C07C *121/48;* C11B *9/00;* A61K *7/46;* C07C *120/02*

U.S. Cl. 260—464 1 Claim

1. The nitrile compound having the structure:



4,331,612

CARBONYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

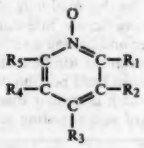
Frederick A. Pesa, Aurora, and Thomas A. Haase, University Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 973,069, Dec. 28, 1978, abandoned. This application Jul. 16, 1980, Ser. No. 170,308

Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.4 1 Claim

1. A process for the production of methylbetacyanopropionate comprising contacting acrylonitrile with carbon monoxide and methanol in the present of a catalyst comprising cobalt carbonyl and a promoter ligand having the following structure:



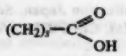
wherein R_1, R_2, R_3, R_4 and R_5 are each independently selected from the group consisting of:

(1) H;

(2) $C_{1\text{-}10}$ alkyls;

(3) $(CH_2)_q OH$ wherein q is 0–10;

(4)



wherein s is 0–10; and

(5) $O(CH_2)_t CH_3$ wherein t is 0–10; and wherein R_1 and R_2 may comprise a five to eight membered carbocyclic fused ring optionally substituted with $C_{1\text{-}10}$ alkyls.

4,331,613

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHYLNAPHTHALENES

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

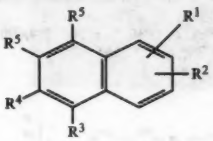
Filed Jun. 23, 1980, Ser. No. 161,810

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928745

Int. Cl.³ C07C *21/00, 21/18*

U.S. Cl. 260—544 B 14 Claims

1. A process for the preparation of an optionally substituted trifluoromethyl-naphthalene which comprises contacting a compound of the formula



(I)

in which

R^1 denotes hydrogen, alkyl, aralkyl, aryl, aryloxy, arylthio, polyhalogenoalkoxy, polyhalogenoalkylthio, halogen, nitro, halogenocarbonyl, halogenosulphonyl, alkylsulphonyl or arylsulphonyl, it being possible for the aromatic nuclei contained in the substituents

R^1 to be in turn substituted by halogen, alkyl, polyhalogenoalkoxy or polyhalogenoalkylthio,

R^2 represents hydrogen, halogen or alkyl and R^3, R^4, R^5 and R^6 denote hydrogen, or

R^3 and R^4 or R^4 and R^5 in each case together denote a fused-on aromatic ring,

and wherein, in the case where R^3 and R^4 together form a fused-on aromatic ring,

R^5 and R^6 independently of one another can also denote, in addition to hydrogen, halogen, nitro, halogenocarbonyl or halogenosulphonyl,

and wherein, in the case where R^4 and R^5 together form a fused-on aromatic ring,

R^3 and R^6 independently of one another can also denote, in addition to hydrogen, halogen, nitro, halogenocarbonyl or halogenosulphonyl,

with carbon tetrachloride and hydrogen fluoride at a temperature of 70° to 120° C. and under a pressure of 5 to 30 bars in the absence of copper or a copper compound.

4,331,614

AROMATIC POLYPHOSPHONATES AND A PROCESS FOR THEIR PRODUCTION

Manfred Schmidt, New Martinsville, W. Va.; Ludwig Bottenbruch; Dieter Freitag, both of Krefeld, Fed. Rep. of Germany; Klaus Reinking, Wermelskirchen, Fed. Rep. of Germany; Harry Röhr, Frechen, Fed. Rep. of Germany, and Hans-Dieter Block, Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,646

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925207

Int. Cl.³ C07F *9/40;* C08G *79/00*

U.S. Cl. 260—930 2 Claims

1. A thermoplastic branched aromatic polyphosphonate of a number average molecular weight of above 11,000 obtained by a transesterification process in which

(A) from 99.25 to 99.975 mole parts of at least one diarylphosphonate and

(B) from 0.025 to 0.75 mole parts of at least one triarylphosphate or at least one aromatic trihydroxy or tetrahydroxy compound or a mixture thereof with the sum of the mole parts of (A) and (B) being 100 and

(C) from 93 to 97 mole parts of at least one aromatic dihydroxy compound are transesterified in the melt at 90° C. to 340° C. in a oxygen-free gas atmosphere either at atmospheric pressure or under reduced pressure and in the presence of from 10^{-5} to 5×10^{-2} mole percent, based on 100 mole percent of aromatic dihydroxy compound, of at least one basic catalyst, with the volatile constituents in the esterification mixture being removed by distillation.

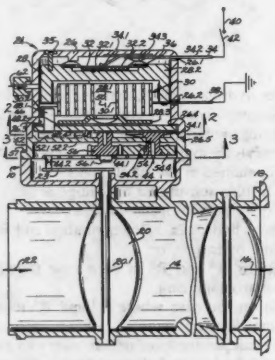
2. A polyphosphonate as claimed in claim 1 which has an average molecular weight ($\overline{M}_n$) of from 13,000 to 40,000.

4,331,615

FUEL SUPPLY SYSTEM WITH AUTOMATIC CHOKE

Hidde Walstra, Almelo, and Jaap Vonk, Enter, both of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 6, 1980, Ser. No. 204,690
Int. Cl.³ F02M 1/12
U.S. Cl. 261—39 C **36 Claims**



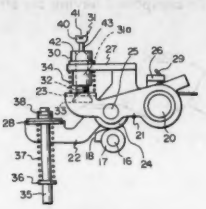
1. A fuel supply system having a carburetor with an air-fuel induction passage for providing a mixture of air and fuel to an automotive engine, an unbalance-mounted air-movable choke valve mounted for movement across the passage to regulate air-flow into the passage, and thermal control means operatively connected to the choke valve for biasing the choke valve toward a position restricting air flow into the passage with a force which decreases over a selected force range in response to increase in temperature over a selected temperature range, characterized in that the thermal control means comprises thermally responsive coil spring means movable to a selected extent in response to increase in temperature of the thermally responsive spring means over said selected temperature range, additional spring means applying a force to resiliently bias the choke valve toward said air flow restricting position, the additional spring means being movable for varying the choke valve biasing force over said selected force range, and motion transfer means responsive to movement of the thermally responsive spring means in response to said increase in temperature over said selected temperature range to move the additional spring means to decrease said choke valve biasing force over said selected force range, the motion transfer means comprising cam means movable with one of said spring means and cam follower means movable with the other of said spring means, the cam means having a cam surface with a plurality of sloped cam riser portions cooperating with the cam follower means to provide progressive movements of the cam follower means during respective portions of the movement of the thermally responsive spring means as the temperature of the thermally responsive spring means is increased over said selected temperature range in response to engine warm up, thereby to provide selected non-linear and progressive changes in choke valve biasing force during the engine warm up.

4,331,616

ADJUSTING SCREW OF A CARBURETOR

Yuzo Kato, Toyota; Mikitoshi Kako, Toukai, and Kunio Kadowaki, Obu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Industry Co., Ltd., both of Aichi, Japan, a part interest to each

Filed Dec. 17, 1980, Ser. No. 217,123
Claims priority, application Japan, Aug. 12, 1980, 55-109878
Int. Cl.³ F02M 7/22
U.S. Cl. 261—50 A **4 Claims**



1. A carburetor comprising: a float chamber; an air horn; a fuel nozzle arranged in said air horn, a valve shaft passing through said air horn and rotatably mounted on said carburetor; a normally closed type spring loaded air valve arranged in said air horn and fixed onto said valve shaft, said air valve being automatically opened in accordance with an increase in the amount of air flowing within said air horn; a fuel passage connecting said float chamber to said fuel nozzle; a cam fixed onto said valve shaft; lever means rotatably mounted on said carburetor and engaging with said cam; and a metering needle supported by said lever means and arranged in said fuel passage for increasing the flow area of said fuel passage in accordance with an increase in the amount of said air, a roller rotatably mounted on said lever means and engaging with said cam; wherein said lever means comprises a first lever pivotally mounted on said carburetor and supporting said roller, a second lever pivotally mounted on said carburetor and supporting said metering needle, and adjusting means interconnecting said second lever to said first lever for adjusting the relative position between said first lever and said second lever, comprising a hollow cylindrical wall formed on said second lever and having a threaded hole formed therein, said hollow cylindrical wall having a thin wall and a top face, and an adjusting screw having an enlarged head portion which projects outward from the top of said hollow cylindrical wall and having a threaded portion screwed into the threaded hole of said hollow cylindrical wall, said adjusting screw interconnecting said second lever to said first lever and having a reduced diameter portion which is located between the top face of said hollow cylindrical wall and the enlarged head portion of said adjusting screw and has a diameter which is smaller than a minor diameter of the threaded portion of said adjusting screw.

4,331,617

CARBURETOR

Kazufuto Tamaki, Nagoya; Tadayoshi Iwazaki; Shigeo Takayanagi, both of Aichi, and Saburo Yamamoto, Nagoya, all of Japan, assignors to Toyota Jidosha Hanbai Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 73,793, Sep. 10, 1979, abandoned. This application Sep. 3, 1980, Ser. No. 183,642
Claims priority, application Japan, Sep. 14, 1978, 53-113471
Int. Cl.³ F02M 5/08
U.S. Cl. 261—72 R **17 Claims**

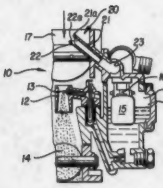
1. A carburetor comprising:
an intake passage for supplying suction air and fuel;
a venturi located in said intake passage;
a nozzle opened in said venturi;
a float chamber having two ends and comprising a float, a

fuel opening formed on an upper wall of said fuel chamber adjacent one end and communicated with a fuel supply source through a communication passage, a pivotably supported plate fixed to said float, and a needle valve inserted within said fuel opening and contacted with said plate for axially sliding within said fuel opening in response to the variation of fuel level in said float chamber wherein said fuel opening is positioned directly above said plate;

an air vent having two air vent tubes for communicating the space above the liquid surface in said float chamber with said intake passage upstream of said venturi; and

first and second communication means each of which has one end opened above the liquid surface in said float chamber and the other end opened at a suitable position in said intake passage in such a manner that a pressure difference is caused between said two communication means;

one end of said first communication means being provided in said one end of said float chamber close to said fuel opening connected to said fuel supply source in said float



chamber and directly above said plate, and the other end of said first communication means receiving the higher pressure,

one end of said second communication means being provided in the other end of said float chamber far from said fuel opening, and the other end of said second communication means receiving the lower pressure,

whereby air is allowed to flow from said first communication means under higher pressure through the space above the liquid surface in said float chamber to said second communication means under lower pressure, and air is allowed to flow, from said one end of said first communication means close to said fuel opening to said one of said second communication means far from said fuel opening, within the space above the liquid surface in said float chamber, to cool down and push away fuel bubbles formed on the liquid surface nearby said fuel opening in said float chamber, thereby preventing the fuel from being supplied over fuel bubbles and being jetted from said air vent into said intake passage.

4,331,618

TREATMENT OF FUEL PELLETS

Richard C. Hoyt, Kennewick, Wash., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 2, 1980, Ser. No. 155,829
Int. Cl.³ G21C *19/48*
U.S. Cl. 264—0.5 **6 Claims**

1. A method of treating irradiated fuel pellets containing a fissile material selected from the group consisting of uranium and thorium comprising:

pulverizing said pellets to a median particle size of less than about 300 microns;

separating the pulverized particles into two fractions by size, one of said fractions containing a higher amount of fissile material than the other, the differences in particle size and fissile content of the fractions being a result of said fuel pellets having been irradiated; and

forming new fuel pellets out of that fraction having a higher amount of fissile material.

4,331,619

ETHYLENE-CHLOROTRIFLUOROETHYLENE COPOLYMER FOAM

Daniel C. Chung, Middlesex; William A. Miller, Bridgewater, and Eugene R. Baumgaertner, Florham Park, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 8, 1980, Ser. No. 213,716
Int. Cl.³ B29C *23/03*
U.S. Cl. 264—13 **8 Claims**

1. A method of making a foamed copolymer composition, the composition comprising: an ethylene and chlorotrifluoroethylene copolymer, the copolymer having between 40 and 60 mol percent of ethylene units and correspondingly between 60 and 40 mol percent of chlorotrifluoroethylene units, an effective amount of a blowing agent, and at least one nucleating agent selected from the group consisting of talc, magnesium carbonate, calcium carbonate, barium carbonate, zinc carbonate, lead carbonate, magnesium oxide, calcium oxide, barium oxide, zinc oxide, and lead oxide, comprising the steps of:

blending the copolymer with an effective amount of a blowing agent, and the nucleating agent;

heating the blend to above the melt temperature of the copolymer under sufficient pressure to prevent foaming; and

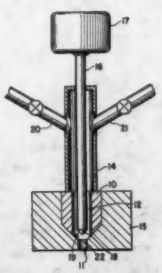
releasing the pressure.

4,331,620

PROCESS FOR PRODUCING CARBON FIBERS FROM HEAT TREATED PITCH

Russell J. Diefendorf, Clifton Park, N.Y., and Dennis M. Riggs, Milford, Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 25, 1980, Ser. No. 123,933
Int. Cl.³ C01B *31/07*
U.S. Cl. 264—29.2 **12 Claims**



1. The process for producing a carbonaceous pitch fiber capable of being thermoset and converted thermally to carbon fiber comprising: heating a non-Newtonian carbonaceous pitch selected from the group consisting of anisotropic pitch, isotropic pitch, and mixtures thereof to spinning temperatures;

subjecting said carbonaceous pitch to shearing forces for spinning said heated pitch to form said fiber, said shearing forces being at least sufficient at spinning temperatures to orient large domains in said pitch into a fine domain structure parallel to the shear direction and to cause gel breakdown.

4,331,621

METHOD FOR BONDING A GASKET SEAL TO SURFACE OF CERAMIC FOAM FILTER

Jerry W. Brockmeyer, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 19, 1981, Ser. No. 245,503
Int. Cl.³ B29H 7/20
U.S. Cl. 264—44 3 Claims

1. A method for integrally bonding a gasket seal to the peripheral surface of a ceramic foam filter used in the filtration of molten metal comprising the steps of:

(A) providing a ceramic slurry impregnated flexible organic foam material;

(B) providing a mold having dimensions corresponding to the desired size of the final filter product;

(C) positioning said slurry impregnated flexible organic foam material in said mold so as to form a gap between the peripheral surface of said flexible foam material and said mold;

(D) feeding a ceramic fiber slurry to said gap formed between said impregnated foam material and said mold; and

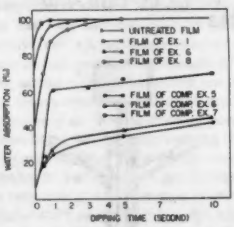
(E) drying and firing the molded part so as to burn out the flexible organic foam and sinter the ceramic so as to form a ceramic foam filter having a plurality of interconnected voids surrounded by a web of bonded ceramic having an integrally bonded ceramic gasket secured to the peripheral surface thereof.

4,331,622

METHOD FOR MANUFACTURING A MICROPOROUS FILM HAVING LOW ELECTRICAL RESISTANCE AND HIGH DURABILITY

Yoshinao Doi, Kawasaki; Osamu Fujii, Tachikawa; Shigeo Kaneko, and Takeo Hanamura, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 929,983, Aug. 1, 1978, Pat. No. 4,210,709.
This application Jan. 14, 1980, Ser. No. 111,971
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.³ B29D 27/00; H01M 2/16
U.S. Cl. 264—45.3 33 Claims



1. A method of manufacturing a microporous film which comprises: blending a polyolefin having a number average molecular weight of 15,000 or more, an inorganic filler, and an organic liquid (A) having a solubility parameter ranging from 8.4 to 9.9 inclusive in amounts of 10 to 60 volume percent, 7 to 42 volume percent, and 30 to 75 volume percent, respectively, based on the whole volume of the polyolefin-filler-organic liquid (A) composition, the amount of the polyolefin being ¼ to 9 multiple of the amount of the inorganic filler; subjecting the resulting blend to molding to form a film; extracting from said film the organic liquid (A) to form a matrix which comprises 40 to 90 volume percent of the polyolefin and 10 to 60 volume percent of the inorganic filler and having therein void spaces at a rate of 30 to 75 volume percent based on the volume of the film; and applying to the matrix an organic substance (B) which is substantially insoluble in and inert to sulfuric acid and has a solubility parameter ranging from 7.3 inclusive to 8.4 exclusive so that said organic substance (B) adheres to the overall surface of the film in an amount of 2 to 20 weight percent based on the total weight of the polyolefin and the inorganic filler.

4,331,623

POLYMER FLOW THROUGH DIE

Bernard Zurkoff, Springfield, N.J., and Bennie M. Lucas, Odessa, Tex., assignors to El Paso Polyolefins Company, Paramus, N.J.

Filed Sep. 22, 1978, Ser. No. 944,837
Int. Cl.³ B29F 3/01
U.S. Cl. 264—141 10 Claims

1. A method of forming pellets of thermoplastic materials which comprises heating and mixing thermoplastic material to bring the same into a homogeneous extrudable condition, extruding said heated material through an extrusion die orifice, said orifice having interior and exterior surfaces coated and impregnated with finely divided solid lubricant particles, whereby the coefficient of friction of metal to plastic is lowered, and collecting the pellets thus formed.

4,331,624

METHOD AND APPARATUS FOR BIAXIALLY STRETCHING A TUBULAR FILM

Masahide Yazawa; Hiroshi Yazawa, both of Kunitachi; Haruhisa Tani, and Kazuhiko Kurihara, both of Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Institute Ltd., both of Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 196,121
Claims priority, application Japan, Oct. 19, 1979, 54-135568
Int. Cl.³ B29C 17/02
U.S. Cl. 264—160 8 Claims

1. A method of biaxially stretching a tubular thermoplastic polymer film, comprising the steps of:

(a) feeding the tubular film in flattened form longitudinally at a first speed;

(b) supporting the film while being longitudinally fed at its opposite selvages from inside on a pair of belt means having respective portions disposed within the tubular film in abutment against the selvages thereof;

(c) gripping the film selvages between said pair of belt means and the peripheries of a pair of substantially coplanar pulleys disposed outside the film, each of said belt means

being trained around one of said pulleys through a substantially semicircular peripheral edge thereof;

(d) rotating said pulleys in opposite directions at a peripheral speed greater than said first speed, whereby the film is stretched longitudinally and transversely and is turned inside out and reversed in direction of travel as the film selvages are advanced along a pair of divergent substantially semicircular paths, respectively, between said pulleys and said belt means;

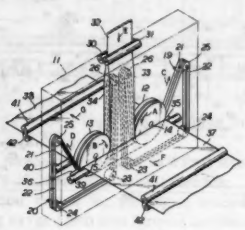
(e) heating the film during the longitudinal and transverse stretching thereof; and

(f) cutting the stretched film at the selvages into a pair of sheets adjacent to a position where the film is released from the belt means and pulleys at the ends of said divergent substantially semicircular paths.

4. An apparatus for biaxially stretching a tubular thermoplastic polymer film, comprising:

(a) means for feeding the tubular film in flattened form at a first speed along a longitudinal path;

(b) a pair of substantially coplanar pulleys disposed one on each side of said path and rotatable in opposite directions at a peripheral speed greater than said first speed;



(c) a pair of endless belt means disposed symmetrically with respect to said path and extending along said longitudinal path between said pulleys for being located within the tubular film in abutment against the opposite selvages thereof, respectively, to support the film at the selvages from inside thereof as it is fed along said longitudinal path, said belt means being trained around said pulleys substantially through their respective substantially semicircular peripheral edges, respectively, for gripping the film at the selvages thereof respectively along a pair of divergent substantially semicircular paths between said pulleys and said belt means, whereby the film is stretched longitudinally and transversely and is turned inside out and reversed in direction of travel upon rotation of said pulleys;

(d) means for heating the film during the longitudinal and transverse stretching thereof; and

(e) means for cutting the stretched film at the selvages into a pair of sheets adjacent to a position where the film is released from said belt means and pulleys at the ends of said divergent substantially semicircular paths.

4,331,625

SOCKET PIPE

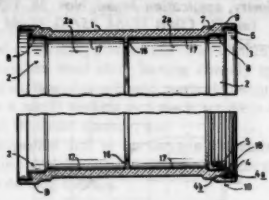
Jelle van de Zee, Dalfsen, and Arien Breunis, Hattem, both of Netherlands, assignors to Wavin B.V., Netherlands

Division of Ser. No. 958,805, Nov. 8, 1978, which is a continuation of Ser. No. 764,421, Feb. 7, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,597

Int. Cl.³ B29O *23/00*

U.S. Cl. 264—249 **5 Claims**

1. The method of forming a socket pipe of plastic material having at one end thereof an opening and an internal groove for receiving a ring-shaped portion of a sealing body; said pipe also having a radially extending head portion defining one side of said groove; the wall of said one end of said socket pipe being thicker than the remainder of said socket pipe and a recess extending into said thicker portion of said wall; said radially extending head portion being of greater internal diameter than said thicker portion of said wall; said recess comprising an extension of said groove; said recess also being directed away from said opening; said method comprising the steps of positioning said sealing body in said one end of said socket pipe and locating a portion of said sealing body in said recess and another portion of said sealing body at said groove; deforming



said radially extending head portion into engagement with the portion of said sealing body at said groove to capture and position said sealing body at said groove; permitting a portion of said sealing body to extend from said recess and said groove into the interior of said socket pipe to form a sealing ring for the end of an adjacent pipe inserted at said end of said socket pipe.

4,331,626

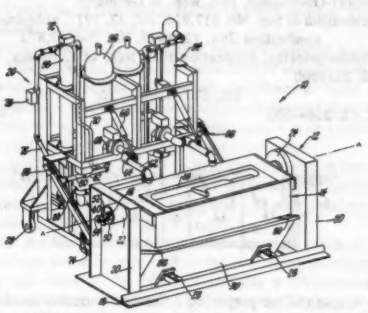
METHOD USEFUL FOR ROTATIONAL MOLDING ARTICLES WHERE SUCCESSFUL RUNS ARE OF DIFFERENT COLORS

Daniel E. Colby, Somersworth, N.H., assignor to McCord Corporation, Detroit, Mich.

Division of Ser. No. 832,640, Sep. 12, 1977, Pat. No. 4,217,325, which is a continuation-in-part of Ser. No. 789,410, Apr. 21, 1977, abandoned. This application Jul. 12, 1979, Ser. No. 56,866

Int. Cl.³ B29C *5/04, 5/12*

U.S. Cl. 264—310 **1 Claim**

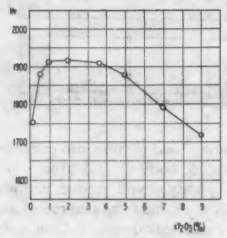


1. A method for molding a plurality of articles of heat-fusing material and of different colors in an open shell mold, said method comprising the steps of: supporting an open shell mold for rotation about an axis to empty the mold of liquid heat-fusing material, positioning a first module in position relative to the mold for supplying a first color of heat-fusing material to the mold and for receiving the liquid material emptied from the mold to mold a plurality of articles of a first color which are sequentially removed from the mold, moving the first module and its first color contents away from the mold and positioning a second module in position relative to the mold for supplying a second color of different from said first color heat-fusing material to the mold and for receiving the liquid material emptied from the mold to mold a plurality of articles of a second color which are sequentially removed from the mold.

4,331,627
ALUMINA SINTERED PRODUCTS AND PROCESS FOR THEIR PRODUCTION

Yoshihiro Yamamoto; Kenji Sakurai, and Hiroshi Tanaka, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 27, 1979, Ser. No. 97,626
Claims priority, application Japan, Nov. 28, 1978, 53-145999
Int. Cl.³ C04B 35/64, 35/50, 35/44
U.S. Cl. 264—332 6 Claims

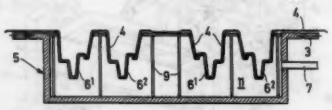


1. In a process for producing an alumina sintered product by sintering a starting alumina mixture containing sintering assistants using a hot press, the improvement wherein the starting alumina mixture consists essentially of alumina and about 0.01 to 0.55% by weight of MgO and about 1 to 5% by weight of Y_2O_3 as grain growth inhibitors and the mixture is hot pressed at a temperature of about 1,400° to 1,600° C. and pressure of about 50 to 2,000 kg/cm^2.

4,331,628
METHOD FOR PREPARING A FINISHED CONCRETE PART

Johannes Ziegler, Viersen, Fed. Rep. of Germany, assignor to Feldmühle Anlagen-und Produktionsgesellschaft mbH, Duesseldorf-Oberkassel, Fed. Rep. of Germany

Continuation of Ser. No. 817,970, Jul. 22, 1977, abandoned. This application Jun. 12, 1979, Ser. No. 47,872
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2633900
Int. Cl.³ B28B 7/36
U.S. Cl. 264—553 4 Claims

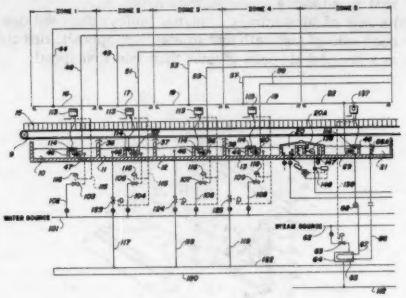


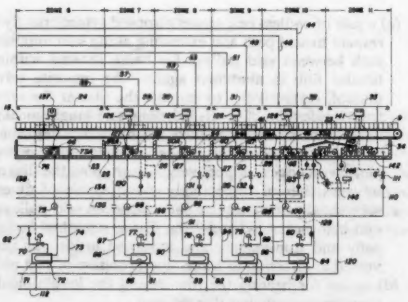
1. A method for preparing a finished concrete product with a smooth surface comprising the steps of: providing a concave casting mold formed from wall means having a plurality of perforations generally uniformly distributed therethrough adapted for permitting a vacuum to be drawn on the interior of said mold, said wall means defining said mold with upper edge portions adapted to receive in supportive engagement therewith a plastic film of thermoplastic synthetic resin; applying a plastic film of thermoplastic synthetic resin on said edge portions with said film arranged to extend over the interior of said mold; heating said plastic film to a temperature below its melting point but sufficient to render said film supple while maintaining said film in supportive engagement on said edge portions over the interior of said mold; applying a vacuum through said perforations in said wall means while said plastic film is in the heated condition so as to evacuate the interior of said mold thereby to draw said heated film into conformance with the contour of said mold interior; filling said mold interior with concrete mixture which is introduced over said plastic film while maintaining said vacuum on said mold; compacting said concrete mixture while permitting said concrete to harden and while maintaining said vacuum; and releasing the hardened, finished concrete part formed from said concrete mixture from said mold.

4,331,629
STEAM AND WATER CONSERVATION SYSTEM FOR PASTEURIZERS

James K. Huling, Belleville, Ill., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Sep. 15, 1980, Ser. No. 187,568
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.
Int. Cl.³ A61L 2/04, 2/24; A23C 3/027; A23L 3/04
U.S. Cl. 422—25 5 Claims





1. A process of conserving the use of water and steam in pasteurizing the contents of containers which comprises: moving the containers from a load end through successive pre-heating showering zones for delivering a heating liquid onto said containers to progressively elevate the contents of the containers toward pasteurizing temperature, then through pasteurizing and temperature holding showering zones for delivering a liquid onto said containers at a pasteurizing temperature, and thence through successive pre-cooling showering zones for delivering a cooling liquid onto said containers to a discharge end; interchanging water between the successive pre-heating zones and successive pre-cooling zones and showering the containers in such zones for maintaining substantial thermal balance in the process; supplying steam for elevating the temperature of water to effect pasteurization of the contents of the containers; storing heated water collected from the pre-heating and pasteurizing zones; collecting cooling water from the pre-cooling zones; and on the occurrence of skippers entering the loading end, applying the stored heated water and the collected cooling water to the respective pre-cooling and pre-heating zones in a predetermined sequence for substan-

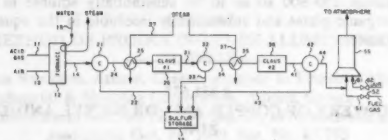
tially sustaining the thermal balance between the pre-heating and pre-cooling zones as the skipper progresses to the discharge end.

4,331,630

APPARATUS FOR INCINERATION OF SULFUR PLANT TAIL GAS

Joe Van Pool, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 909,079, May 24, 1978, Pat. No. 4,241,040.
This application Jul. 28, 1980, Ser. No. 172,905
Int. Cl.[3] C01B *17/50*
U.S. Cl. 422—160 1 Claim



1. Apparatus comprising:

a furnace capable of converting hydrogen sulfide to sulfur dioxide at high temperatures;

first conduit means for passing a first feed stream containing hydrogen sulfide (H_2S) into said furnace;

second conduit means for passing a second feed stream containing oxygen into said furnace to convert part of the H_2S contained in said first feed stream to sulfur dioxide (SO_2) wherein a gaseous reaction mixture containing free sulfur and unreacted H_2S and SO_2 gases is formed in said furnace;

first sulfur removal means for removing at least a part of the free sulfur contained in said gaseous reaction mixture, thereby producing a denuded gaseous stream containing unreacted H_2S and SO_2;

third conduit means for withdrawing said gaseous reaction mixture from said furnace and for providing said gaseous reaction mixture to said first sulfur removal means;

a catalytic sulfur converter means to convert a portion of the unreacted H_2S and SO_2 gases contained in said denuded gaseous stream to free sulfur, thereby producing a converted gaseous stream containing free sulfur and unreacted H_2S and SO_2 gases;

fourth conduit means for withdrawing said denuded gaseous stream from said first sulfur removal means and for providing said denuded gaseous stream to said catalytic sulfur converter means;

second sulfur removal means to remove at least a portion of the free sulfur from said converted gaseous stream, thereby producing a tail gas stream containing unreacted H_2S and SO_2;

fifth conduit means for withdrawing said converted gaseous stream from said catalytic sulfur converter means and for providing said converted gaseous stream to said second sulfur removal means;

a burner, wherein said burner comprises a part of an incinerator, said incinerator having a stack associated therewith; and

means for mixing said tail gas stream with a fuel gas stream connected to means for supplying the mixture of said fuel gas stream and said tail gas stream to said burner to therein convert substantially all the H_2S in said tail gas stream to SO_2 at a stack temperature in the range of about 900° F. to about 950° F., the combustion product containing less than about 10 PPM H_2S.

4,331,631

ENHANCED OXIDE WHISKER GROWTH ON PEELED Al-CONTAINING STAINLESS STEEL FOIL

Lloyd R. Chapman, St. Clair Shores; Charles W. Vigor, Rochester, and John F. Watton, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1979, Ser. No. 98,075
Int. Cl.[3] F01N *3/10*; C23C *11/08*; B01J *21/04, 35/02*
U.S. Cl. 422—180 21 Claims

1. A method of forming a metal foil of an aluminum-containing ferritic stainless steel alloy having densely spaced oxide whiskers on a surface thereof, said method comprising

forming by a metal peeling process a severely worked foil having an irregular surface, and

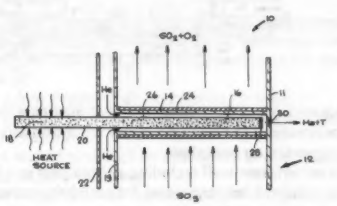
heating the peeled foil in an oxygen-containing gas at a temperature and for a time sufficient to form said oxide whiskers on said surface.

4,331,632

CATALYTIC CARTRIDGE SO_3 DECOMPOSER

Terry R. Galloway, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 18, 1980, Ser. No. 208,218
Int. Cl.[3] F28D *21/00*
U.S. Cl. 422—206 7 Claims



1. A cross-flow SO_3 decomposer for thermochemical hydrogen production, comprising:

a cartridge comprising a plurality of walls defining a chamber therebetween, and a cylindrical tube mounted in the chamber and extending through the chamber from one wall of the chamber to an opposing wall thereof, the outer surface of the cylindrical tube being coated with a catalyst for promoting SO_3 decomposition reactions;

a heat pipe extending into the cylindrical tube and in thermal proximity therewith, the heat pipe adapted to be driven by a heat source for transferring heat to the catalyst for heating the catalyst; and

an inlet port and an outlet port in opposing walls of the cartridge, the inlet port and outlet port being provided at opposite sides of the tube substantially perpendicular to the longitudinal axis of the tube, whereby SO_3 gas may be flowed through the inlet port in a direction substantially normal to the tube across the catalyst to contact the catalyst and thereby produce SO_3 decomposition into SO_2 and O_2 which are removable through the outlet port.

4,331,633

BATCH STERILIZING UNIT

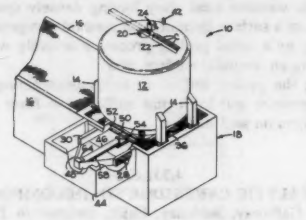
Robert L. Lathrop, Jr., San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

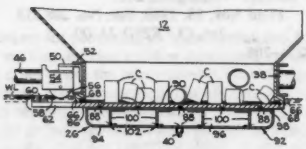
Filed Jun. 16, 1980, Ser. No. 159,900
Int. Cl.[3] A61L *2/06*
U.S. Cl. 422—302 3 Claims

1. A batch sterilizer having a chamber, said chamber having steam and water connections thereto and said chamber having a lower opening therein through which articles are discharged, and a bottom discharge door for selectively closing said opening, said bottom discharge door comprising,

a perforated plate adapted for movement between a first position closing said chamber opening in which said plate on one side constitutes a primary support for articles in said chamber, and a second open position permitting the articles to fall by gravity from said sterilizer chamber,

means defining a cavity on one side of said plate remote from said sterilizer chamber, said cavity being defined by an imperforate wall connected to said plate and peripherally embracing said perforations therein, whereby water and





steam from said sterilizer chamber may pass through said perforations and into said cavity while said articles remain supported on said plate,

said imperforate wall including a drain port in a lower portion thereof defining means for permitting escape of residual water, condensed steam, and steam from said cavity while said articles are supported upon said plate thereby to permit relative equalization of temperatures above and below said plate for uniform treatment of said articles.

4,331,634

SOLVENT EXTRACTION PROCESS FOR THE SELECTIVE EXTRACTION OF PALLADIUM

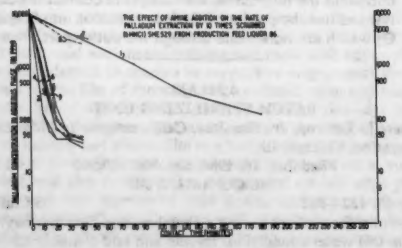
Kenneth J. Shanton, Sonning Common, and Richard A. Grant, Usbridge, both of England, assignors to Matthey Rustenburg Refiners (Pty) Limited, Johannesburg, South Africa

Continuation of Ser. No. 3,287, Jan. 15, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,703

Claims priority, application United Kingdom, Jan. 17, 1978, 1819/78

Int. Cl.³ C01G *55/00*

U.S. Cl. 423—22 **19 Claims**


THE EFFECT OF AMINE ADDITION ON THE RATE OF PALLADIUM EXTRACTION BY 10 TIMES SCRUBBED BIMIC(I SHELSOL 820 FROM PRODUCTION FEED LIQUOR #6

1. In a process for the selective separation and purification of palladium which is present in an aqueous solution with at least one other platinum group metal comprising the following steps:

(a) adjusting the pH of the aqueous solution to render it acidic;

(b) contacting the so-obtained acidic solution with an organic phase containing an oxime extractant for palladium, and

(c) removing from contact with the acidic solution the organic phase containing substantially all of the palladium, the improvement which comprises catalytically accelerating the said separation by including with the oxime extractant at step (b) from about 100 to 2000 ppm, based upon the total of said organic phase containing the oxime extractant, of an anionic phase transfer material selected from the group consisting of primary amines, secondary amines, tertiary amines, quaternary ammonium compounds and sulphur-phosphorus- and arsenic-containing organic compounds having a molecular weight in the range 150–900 so as to be substantially soluble in the organic phase and substantially insoluble in the aqueous phase.

4,331,635

RECOVERY OF COPPER AND/OR NICKEL AND/OR ZINC

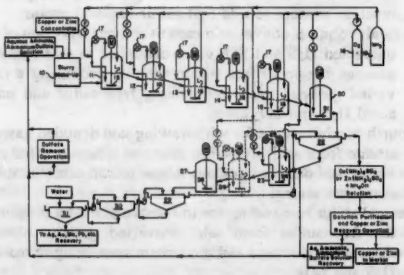
Nathaniel Arbiter, and Martin C. Kuhn, both of Tucson, Ariz., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 656,840, Feb. 10, 1976, abandoned, which is a continuation of Ser. No. 457,269, Apr. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 232,454, Mar. 7, 1972, abandoned, and a continuation-in-part of Ser. No. 265,709, Jun. 23, 1972, abandoned, and a continuation-in-part of Ser. No. 301,475, Oct. 27, 1972, abandoned, which is a continuation-in-part of said Ser. No. 232,454, abandoned, said Ser. No. 335,770, is a continuation-in-part of Ser. No. 242,340, Apr. 10, 1972, abandoned, and Ser. No. 438,649, Feb. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 232,454, abandoned. This application Apr. 13, 1978, Ser. No. 896,212

The portion of the term of this patent subsequent to May 4, 1995, has been disclaimed.

Int. Cl.³ C22B *15/10, 19/24;* C01G *33/12, 39/00*

U.S. Cl. 423—33 **3 Claims**



1. The method of recovering a metal of the group consisting of copper, nickel and zinc from finely divided sulfidic minerals thereof which comprises forming, in an aqueous solution containing ammonium sulfate and free ammonia, a slurry of said minerals ground substantially to the fineness of flotation concentrates, passing said slurry into a closed leaching vessel, introducing oxygen into said vessel in an amount sufficient to maintain therein an oxygen partial pressure of at least several psi., maintaining the pressure in said vessel near atmospheric pressure and maintaining the temperature of the slurry in said vessel in the range from 50° C. to the boiling temperature, mechanically agitating the body of slurry in said vessel with a vigor input of at least 0.05 horsepower per cubic foot while continuously recirculating oxygen-bearing gas from above the

body of agitated slurry into said body at a substantial depth below the surface of said body, withdrawing from said vessel slurry containing said metal complexed with ammonia dissolved in the aqueous phase and mineral matter depleted in said metal in the solid phase, separating said solid phase containing residual and undissolved copper, nickel or zinc from the leach solution and mixing the solid phase with aqueous ammonium sulfate solution containing free ammonia and subjecting the resulting slurry to a secondary leaching operation in a closed releaching vessel at a lower pH and at a higher temperature than during the primary leaching operation while mechanically agitating the slurry in said releaching vessel with a vigor input of at least 0.05 horsepower per cubic foot and while introducing oxygen into the agitated slurry at a substantial depth below its surface, and thereafter separating the aqueous phase from the solid phase.

4,331,636
METHOD OF PRODUCING PURE ALUMINA FROM ALUNITE

Jason Svoronos, Athens, Greece, assignor to Financial Mining-Industrial & Shipping Corporation, Athens, Greece

Continuation of Ser. No. 726,554, Sep. 27, 1976, abandoned. This application Oct. 24, 1979, Ser. No. 87,775

Claims priority, application Greece, Sep. 30, 1975, 49019

Int. Cl.³ C01F 7/22

U.S. Cl. 423—126 **7 Claims**

1. A method of producing purified alumina from impure alunite consisting of:

(a) calcinating the impure alunite in the presence of a chloride selected from the group consisting of potassium chloride, sodium chloride, and mixtures thereof at a temperature of between about 500° C. to 590° C. to form impure alumina (Al_2O_3), sulfates, dilute HCl, and other by-products;

(b) removing the produced sulfates from the calcination products of (a) by extraction with hot water;

(c) contacting the impure alumina produced in (a) with HCl having a concentration of 30% or more and at a temperature of between room temperature and about 100° C. to produce an aqueous solution of aluminum chloride;

(d) recovering the aluminum chloride from the solution of (c) by concentrating to produce crystals of $AlCl_3 \times 6H_2O$; and

(e) calcinating the aluminum chloride from (d) to yield pure alumina and concentrated HCl.

4,331,637
PROCESS FOR PURIFYING ALUMINUM CHLORIDE

Wendell E. Dunn, Jr., Spearfish, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 20, 1981, Ser. No. 255,355

Int. Cl.³ C01F 7/62

U.S. Cl. 423—135 **1 Claim**

1. A method for purifying with respect to iron, aluminum chloride produced via the chlorination of aluminum bearing ores or materials which also contain iron comprising the steps of:

(a) chlorinating the aluminum value containing material in a manner which produces a gaseous product containing both ferric chloride and aluminum chloride;

(b) oxidizing at least a portion of the ferric chloride to particulate iron oxide;

(c) removing the iron oxide from the gaseous product.

(d) reducing remaining ferric chloride to ferrous chloride, using reduced iron oxide;

(e) condensing the ferrous chloride along with between about 10% to 20% of the available aluminum chloride to assure removal of substantially all iron chloride; and

(f) condensing the remaining aluminum chloride as pure product.

4,331,638
METHOD OF DRY SCRUBBING REACTION PRODUCTS RESULTING FROM FLAME BURNING

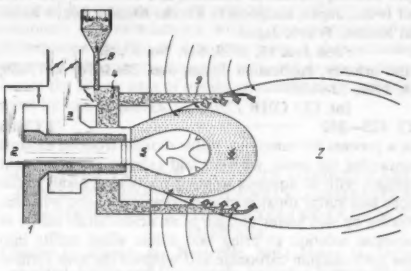
Sigfrid Michelfelder, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 176,187

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932676

Int. Cl.³ B01D 53/34

U.S. Cl. 423—210 **8 Claims**



1. A method of generating a flame while scrubbing undesirable reaction products including sulfur, chlorine and fluorine compounds from the flame, said method including the simultaneous steps of:

ejecting a first stream of air to form an air core;

ejecting a stream of fuel around the core of air and directly adjacent thereto;

ejecting a second stream of air around the stream of fuel and directly adjacent thereto;

ejecting a carrier medium outboard of and in spaced relation to the second stream of air and, said carrier medium being ejected toward the second stream of air and downstream from the ejection of the core air, fuel stream and second air stream;

igniting the fuel to form a back flow region within the air core; a primary combustion region around the back flow region and extending downstream therefrom, and a post reaction region around a portion of the primary combustion region and extending downstream of the primary combustion region, and

entraining combustion product, binding additives in the carrier medium, which additives remaining in the post reaction region to bind with the undesirable reaction products and thereby scrub the flame at the source of the flame.

4,331,639
PROCESS FOR REMOVING SO_x AND NO_x COMPOUNDS FROM GAS STREAMS

Robert H. Hass, Fullerton, and Walter Albertson, Brea, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 11, 1981, Ser. No. 242,611

Int. Cl.³ B01D 53/34

U.S. Cl. 423—235 **2 Claims**

1. A process for removing NO from a feed gas stream and converting said NO to elemental nitrogen, which process comprises (1) contacting said feed gas with an aqueous liquid absorbent comprising a ferrous chelate and the reaction product of formic acid and an alkanolamine containing a tertiary amine functional group in an absorption zone wherein said NO is removed and wherein fresh absorbent is continuously introduced and spent absorbent continuously withdrawn, (2) regenerating said withdrawn spent absorbent by subjecting the spent absorbent in the presence of added formic acid or oxalic acid to an elevated temperature above about 150° F. in a regeneration

zone under conditions such that the spent absorbent is more active for removing NO, (3) recycling regenerated absorbent obtained from step (2) to step (1), and (4) controlling the amount of ferrous chelate introduced into said absorption zone such that, on an hourly basis, more than 1 but less than about 20 moles of ferrous chelate enter said absorption zone per mole of NO.

4,331,640

PROCESS FOR REMOVING SULFUR DIOXIDE FROM AN EXHAUST GAS CONTAINING THE SAME

Tomijiro Morita; Masakazu Takaiwa, and Toshiharu Matsuda, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,083

Claims priority, application Japan, Jun. 26, 1978, 53-77158; Jul. 24, 1978, 53-90265

Int. Cl.³ C01B *17/00, 17/45, 17/46*

U.S. Cl. 423—242 **1 Claim**

1. In a process for removing sulfur dioxide from an exhaust gas containing the same, wherein said exhaust gas is brought into contact with an aqueous solution containing alkali sulfite to absorb said sulfur dioxide in said exhaust gas, and wherein, after taking up said sulfur dioxide as an acidic alkali sulfite in said aqueous solution to bring said acidic alkali sulfite into reaction with calcium carbonate and wherein the thus formed calcium sulfite is removed by filtration and discharged while the filtrate is circulated to be used in a step of absorption of said sulfur dioxide,

the improvement comprising carrying out said reaction between said acidic alkali sulfite and calcium carbonate in a sequence of steps consisting of

(1) a first step in which particles of calcium carbonate having an average diameter of 60 to 300 micron are added to said aqueous solution containing said acidic alkali sulfite, in an amount corresponding to 20 to 60% by weight of the total amount of said acidic alkali sulfite to produce a reaction at a pH of lower than 6.8,

(2) a second step in which particles of calcium carbonate having an average diameter smaller than 40 micron are added to the effluent from said first step to bring into reaction said calcium with the remaining acidic alkali sulfite in said effluent, to have gypsum separated out together with calcium sulfite and,

(3) a third step of filtering said separated gypsum and alkali sulfite in an atmosphere of carbon dioxide generated in said reaction between said acidic alkali sulfite and calcium carbonate and removing the same from the process system so as to prevent the accumulation of sulfate in said process.

4,331,641

SYNTHETIC CRYSTALLINE METAL SILICATE COMPOSITIONS AND PREPARATION THEREOF

James A. Hinnenkamp, and Vernon V. Walatka, Jr., both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

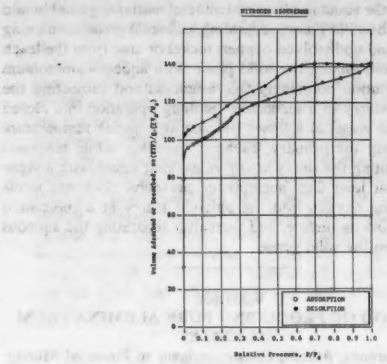
Filed Nov. 7, 1979, Ser. No. 92,127

Int. Cl.³ C01B *33/20, 35/10*

U.S. Cl. 423—277 **6 Claims**

1. A method of preparing a crystalline metal silicate which is substantially free of aluminum having a composition, in terms of mole ratios as follows:

$0.8 \pm 0.4\ M_{2/n}O:W_2O_3:5$ to 500 SiO_2:0 to 100 H_2O where M is a cation, n is the valence of said cation and W_2O_3 is a metal oxide, said metal silicate having the X-ray diffraction pattern set forth in Table 1 of the specification, and a nitrogen isotherm adsorption capacity as shown in FIG. 1 which comprises preparing a reaction mixture which is substantially free of aluminum ions and which contains tetraalkylammonium compound, sodium hydroxide, an oxide of the desired metal, an oxide of silicon, water and an aluminum chelating agent effective to provide a catalytically active crystalline metal silicate, maintaining the mixture at an elevated temperature until crystals of said



metal silicate are formed and separating and recovering said crystals, and in terms of mole ratios falling within the following ranges, the reaction mixture contains:

$OH^-/Si\ O_2$	.05–3
$R_4N^+/(R_4N^+ + Na^+)$	0.1–
H_2O/OH	10–500
SiO_2/W_2O_3	5–500
SiO_2/Chelating agent	1–1000

wherein R is propyl.

4,331,642

PROCESS FOR PREPARING ALUMINUM OR MAGNESIUM PHOSPHIDE

Franziskus Horn, Rodejew, and Ekkehard Fluck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Degesch GmbH, Frankfurt, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,481

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945647

Int. Cl.³ C01B *25/08*

U.S. Cl. 423—299 **14 Claims**

1. A process of preparing the phosphide of aluminum or magnesium comprising reacting the finely divided metal or an alloy of the two metals with yellow phosphorus at a temperature between 300° and 600° C. in an inert gas atmosphere and in the presence of a catalytically effective amount of the element chlorine, bromine or iodine or a compound of such element with phosphorus, sulfur, hydrogen, ammonium zinc or the metal being reacted.

4,331,643

USE OF DIAZOBICYCLOOCTANE (DABCO) AS A TEMPLATE IN ZEOLITE SYNTHESIS

Mae K. Rubin, Bala Cynwyd, Pa., and Edward J. Rosinski, Pedricktown, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,351

Int. Cl.³ C01B *33/28;* **C07F** *5/06;* **B01J** *31/14*

U.S. Cl. 423—329 **2 Claims**

1. In a process of producing a ZSM-4 type synthetic crystalline aluminosilicate zeolite having the X-ray diffraction pattern of Table 1, which comprises preparing a reaction mixture comprised of sources of alkali metal, alumina, silica, at least one organic nitrogen-containing compound and water, and maintaining said mixture under crystallization conditions until

crystals and said zeolite are formed, the improvement wherein said at least one organic nitrogen-containing compound is triethylenediamine.

4,331,644

COMBUSTION CATALYST AND PROCESS FOR USING SAME

James S. Ritscher, Ossining, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 864,835, Dec. 27, 1977, Pat. No. 4,170,571. This application May 8, 1979, Ser. No. 37,030

Int. Cl.[3] C01B *31/20;* C10K *3/04, 1/20*

U.S. Cl. 423—437 1 Claim

1. Process for oxidatively combusting a chemical compound selected from the group consisting of hydrocarbons, carbon monoxide and oxygenated hydrocarbons which comprises contacting said compound in admixture with oxygen at a temperature of from 100° C. to 450° C. with a copper zeolite having in the dehydrated state a composition in terms of mole ratios of oxides as:

$$1.6\text{–}2.0Cu^{+}\ {}^{+}0\text{:}0\text{–}0.2M_{2/n}O\text{:}Al_2O_3\text{:}20\text{–}100SiO_2$$

wherein M is at least one cation other than Cu^{++} having a valence of "n", said zeolite composition having a characteristic X-ray powder diffraction pattern containing at least the d-spacings of Table I.

4,331,645

ALUMINA FROM ALKALI METAL-ALUMINUM CHLORIDE COMPLEXES

Wendell E. Dunn, Jr., Spearfish Canyon, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 20, 1981, Ser. No. 255,551

Int. Cl.[3] C01F *7/02*

U.S. Cl. 423—625 2 Claims

1. A method for the production of reduction cell grade alumina from alkali metal/aluminum chloride complexes comprising the steps of:

A. reacting the alkali metal/aluminum chloride complexes with oxygen in a three phase fluidized bed comprising:

(I) as a solid phase, particles or pebbles of alumina of at least about 1/16" in average diameter;

(II) as a gaseous phase oxygen fed at a rate to provide a fluidizing gas velocity above about 8'/sec.; and

(III) as a liquid phase coating the particles of alumina an alkali metal/aluminum chloride complex; and

B. separating the product solids from the gases exiting the fluidized bed.

4,331,646

IODINE COMPOUND FOR USE AS A TRACER IN RADIOIMMUNOLOGY

Michel Delaage, Marseilles, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 19, 1979, Ser. No. 50,060

Claims priority, application France, Jun. 20, 1978, 78 18404

Int. Cl.[3] A61K *43/00;* G01N *33/56, 33/60;* C07C *103/52*

U.S. Cl. 424—1 10 Claims

1. An iodine labelled compound having the intended function of a tracer for use in radioimmunology as a labeled antigen, wherein said compound is constituted by a conjugate compound obtained by condensing an antigen having a free carboxylic function and a dipeptide, said dipeptide being constituted by a product of condensation between tyrosine and glycine, the tyrosine group of said dipeptide being labeled with radioactive iodine.

4,331,647

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTIBODY FRAGMENTS SPECIFIC TO TUMOR-ASSOCIATED MARKERS

Milton D. Goldenberg, 11837 Gainsborough Rd., Potomac, Md. 20854

Filed Mar. 3, 1980, Ser. No. 126,263

Int. Cl.[3] A61K *49/00, 43/00*

U.S. Cl. 424—1 50 Claims

1. A method for detecting and localizing a tumor which either produces or is associated with a cytoplasmic, intracellular or cell-surface marker substance which comprises injecting a human subject parenterally with a marker-specific fragment obtained by cleavage of an antibody specific to said marker substance and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device, and subsequently scanning with said device to detect and locate the site or sites of uptake of said labeled antibody fragment by said tumor.

4,331,648

N-ACETYL-CYSTEINE PROTECTS AGAINST CARDIAC DAMAGE FROM SUBSEQUENTLY-ADMINISTERED CARDIO-TOXIC ANTHRA-CYCLINE IN CANCER THERAPY

Charles E. Myers, Jr., Rockville, Md.; James H. Doroshow, Upland, Calif., and Gershon Y. Locker, Chicago, Ill., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 100,496, Dec. 5, 1979, abandoned, which is a continuation of Ser. No. 24,246, Mar. 27, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 190,064

Int. Cl.[3] A61K *31/70, 31/71*

U.S. Cl. 424—10 10 Claims

1. A method of protecting a cancer patient being treated for antitumor purposes with a therapeutically acceptable and effective amount of a cardio-toxic anthracycline drug against usually-ensuing cardiac damage without affecting tumor response or delivery of the drug to cardiac tissue sites, comprising orally administering a range of from 750 mg to 2 grams per kg of N-acetyl-cysteine to a patient undergoing therapy with a cardio-toxic anthracycline drug.

4,331,649

IMMUNE COMPLEX ASSAY

Shireen M. Chantler, London, and William Edgar, West Wickham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Oct. 9, 1979, Ser. No. 82,489

Claims priority, application United Kingdom, Oct. 10, 1978, 39980/78

Int. Cl.[3] G01N *33/50, 33/54, 33/68*

U.S. Cl. 424—12 4 Claims

1. A method for the estimation of an immune complex and analysis of a constituent thereof comprising a latex particle agglutination test in which a reagent comprising low affinity latex particles is contacted with a sample containing immune complex, the low affinity latex particles comprising latex particles coated with IgG antibodies to the complex constituent in an amount of from 2 to 10 μg per mg of latex.

4,331,650

IDENTIFICATION OF REAGINS IN THE BLOOD SERUM OF ALLERGEN SENSITIZED VERTEBRATES

John H. Brewer, and Terry L. Foster, both of Abilene, Tex., assignors to Science Research Center, Inc., Abilene, Tex.

Filed Jul. 18, 1980, Ser. No. 170,143

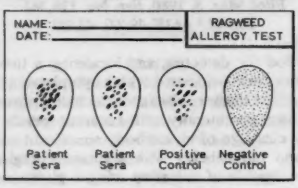
Int. Cl.[3] A61K *39/35*

U.S. Cl. 424—12 6 Claims

1. A reagent for identifying a given reagin in the blood

serum of a vertebrate, which reagent comprises; a plurality of non-polar, porous carrier particles having adsorbed thereon a composition of the formula

A X-Y



wherein A represents a polar allergen, X is a hydrophilic, polar moiety and Y represents a hydrophobic, non-polar moiety, and where X and Y are chemically bound together, and the X-Y compound is complexed with the allergen such that the X moiety is oriented toward the polar allergen molecule and the Y moiety is oriented away from the polar allergen molecule.

4,331,651

DEPOT BODY ON THE BASIS OF SILICONE RUBBER AND PROCESS FOR THE PREPARATION THEREOF

Bernhard Reul, Königstein, and Dietrich Hiller, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,665

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902414

Int. Cl.³ A61K *9/22, 9/52*

U.S. Cl. 424—19 **14 Claims**

1. A depot body on a silicone rubber carrier for the prolonged release of an active ingredient which comprises 2 to 50% by weight, based on the silicone rubber carrier, of a release-promoting substance or mixture thereof which is physiologically acceptable and only slightly soluble in water but soluble in silicone rubber, wherein said substance is an alcohol selected from the group consisting of 2-octyldodecanol, oleyl alcohol and phenylethanol, or an ester selected from the group consisting of myristic acid isopropyl ester, caprylic/capric acid laurylstearyl ester, lauric acid hexyl ester, propionic acid myristyl ester, isostearic acid ethyl-lauryl ester, oleic acid ethyl ester, acetic acid phenyl ester, benzoic acid benzyl ester, salicylic acid methyl ester, lauric acid mono-1,1-propanediol ester, fatty acid polyethyleneglycol ester, caprylic/capric acid-1,2-propanediol diester, caprylic/capric acid glycerol monoester, lauric acid glycerol diester, butyric acid glycerol triester, caprylic/capric/lauric acid glycerol triester, acetic/stearic-/oleic acid glycerol triester, adipic acid dibutyl ester, sebacic acid dibutyl ester, phthalic acid ester, citric acid triethyl ester, or an ether selected from the group consisting of didecyl ether, fatty alcohol polyethyleneglycol ether, alkyl-aryl polyethyleneglycol ether and anisol or a ketone such as methylnonylketone.

4,331,652

CONTROLLED RELEASE PARASITIC FORMULATIONS AND METHOD

Nelson H. Ludwig, and Rudolph J. Boisvenue, both of Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 74,681, Sep. 12, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,790

Int. Cl.³ A61K *9/22, 9/26*

U.S. Cl. 424—19 **9 Claims**

1. A controlled release biodegradable dosage form useful in the prolonged therapeutic and prophylactic control of endoparasites in domestic animals comprising about 20 to about 80 percent by weight of a anthelmintic agent initimately dispersed throughout about 80 to 20 percent by weight of a copolymeric matrix derived from the condensation of about 60 to about 95 weight percent of lactic acid and about 40 to about 5 weight percent of glycolic acid, said copolymer having an inherent viscosity of about 0.08 to about 0.30 when measured in chloroform, and a molecular weight of about 6000 to about 35000, said copolymer being substantially free of polymerization catalyst.

4,331,653

COMPOSITION FOR A TOPICAL CREAM FOR CURTAILING BLEEDING AND TREATING SKIN DISORDERS

Robert Brown, 3249 Greenfield Dr., Marietta, Ga. 30067, and Jerome Setloff, 6851 Roswell Rd., Atlanta, Ga. 30328

Continuation-in-part of Ser. No. 825,853, Aug. 18, 1977, Pat. No. 4,166,108, which is a continuation-in-part of Ser. No. 764,405, Jan. 21, 1977, abandoned. This application May 11, 1979, Ser. No. 38,135

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.

Int. Cl.³ A61K *9/70, 33/30, 33/26, 31/00*

U.S. Cl. 424—28 **28 Claims**

1. A non-sting styptic composition as a stable cream or lotion comprising:

(1) from about 2% to about 12% by weight of a long chain fatty acid selected from the group saturated or unsaturated having from nine to twenty-three carbon atoms therein;

(2) from about 0.4% to about 3.5% by weight of a wax filler;

(3) from about 1% to about 10% by weight of polyethylene glycol stearate;

(4) from about 1% to about 5% by weight of polyethylene glycol (20) sorbitan beeswax; and,

(5) from about 0.5% to about 25% by weight of an acidic metallic salt, said acidic metallic salt being characterized by possessing a degree of acidity sufficient to stanch the flow of blood and being capable of being formulated into said stable cream or lotion,

(6) the balance being water.

15. An improved styptic composition which does not sting or stain clothes when applied, and composition being in the form of a stable cream or lotion which includes:

(1) from about 2% to about 12% by weight of a long chain fatty acid;

(2) from about 0.4% to about 3.5% by weight of a wax filler;

(3) from about 1% to about 10% by weight of polyethylene glycol stearate;

(4) from about 1% to about 5% by weight of polyethylene glycol sorbitan beeswax; and,

(5) from about 0.5% to about 25% by weight of an acidic metallic salt,

(6) the balance being water.

22. A bandage having a wound covering area composed of fibers selected from the group consisting of natural fibers, man-made fibers and mixtures thereof, said bandage including a non-sting, non-stain styptic composition, said styptic composition being in the form of a stable cream or lotion which includes:

(1) from about 2% to about 12% by weight of a long chain fatty acid;

(2) from about 0.4% to about 3.5% by weight of a wax filler;

(3) from about 1% to about 10% by weight of polyethylene glycol stearate;

(4) from about 1% to about 5% by weight of polyethylene glycol sorbitan beeswax; and,

(5) from about 0.5% to about 25% by weight of an acidic metallic salt,

(6) the balance being water.

4,331,654

MAGNETICALLY-LOCALIZABLE, BIODEGRADABLE LIPID MICROSPHERES

Robert M. Morris, Franklin, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 13, 1980, Ser. No. 159,321
Int. Cl.³ A61K 9/50
U.S. Cl. 424—38 11 Claims

1. A magnetically-localizable, biodegradable, substantially water-free drug carrier formulation consisting essentially of lipid microspheres containing a magnetically-responsive substance, one or more biodegradable lipids and one or more non-toxic surfactants.

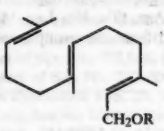
4,331,655

COSMETIC COMPOSITIONS AND PROCESSES CONTAINING ETHER AND ACYL DERIVATIVES OF 3,7,11-TRIMETHYL-2,6,10-DODECATRIENE-1-OL

Wladimir Tur, Mutschellen, Switzerland, assignor to Uni-Chemie AG, Volketswil, Switzerland

Filed Sep. 4, 1979, Ser. No. 71,796
Int. Cl.³ C11D 3/48; A61K 7/42, 7/44
U.S. Cl. 424—59 25 Claims

1. A cosmetic composition for face and body which increases the capacity of the skin to retain moisture, comprising a cosmetologically effective amount of a compound of the formula



wherein R is C_1–C_4 alkyl; and

a cosmetologically acceptable carrier.

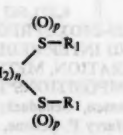
4,331,656

COMPOSITION AND PROCESS FOR REDUCING THE OILY APPEARANCE OF THE HAIR AND SKIN

Claude Bouillon, Eaubonne, and Jean Maignan, Tremblay les Gonesse, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 21, 1980, Ser. No. 115,556
Claims priority, application France, Jan. 29, 1979, 79 02188
Int. Cl.³ A61K 7/00, 7/06
U.S. Cl. 424—70 9 Claims

1. A cosmetic composition for treating oily hair or skin to reduce the oily appearance thereof comprising in an appropriate vehicle an effective amount of a compound having the formula



(I)

wherein

n is a whole number from 1 to 10 inclusive;

p is 0, 1 or 2; and

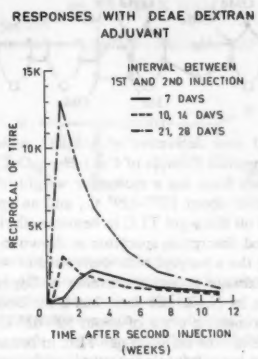
R_1 represents —(CH_2—CHR_5)—OH wherein R_5 represents hydrogen, methyl or hydroxy methyl.

4,331,657

FECUNDITY OF DOMESTIC LIVESTOCK

Ronald I. Cox, Beecroft; Ronald M. Hoskinson, Normanhurst; Rex J. Scaramuzzi, Thornleigh; Patricia A. Wilson, Beacon Hill, and John M. George, Armidale, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jan. 21, 1981, Ser. No. 226,990
Claims priority, application Australia, Feb. 6, 1980, PE2274
Int. Cl.³ A01N 45/00; A61K 39/00
U.S. Cl. 424—88 16 Claims



1. A method for increasing the fecundity of a flock of sheep or goats, comprising immunizing the females in the flock against a steroidal androgen or a steroidal oestrogen other than oestradiol-17β, to produce a mean steroid-binding antibody titre in the flock of 1 in 500 to 1 in 3000 at the start of a mating period and to maintain that titre so that it does not exceed the range of 1 in 200 to 1 in 2000 at the conclusion of the mating period provided that the overall decline in mean steroid-binding antibody titre of the flock does not exceed 75% during the mating period, such mating period lasting at least twice the length of the average oestrous cycle for animals in the flock.

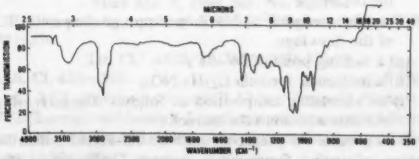
7. A method as claimed in claim 1, wherein the immunization is performed with an immunogenic conjugate of the steroid androgen or oestrogen and an immunogenic protein.

4,331,658

METHOD OF TREATING SWINE DYSENTERY WITH ANTIBIOTIC A-32887

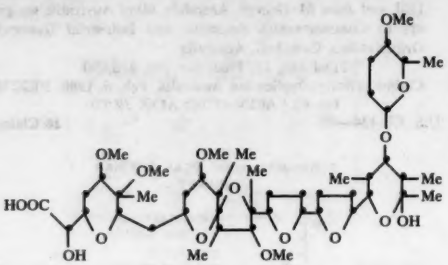
Robert L. Hamill, Greenwood, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 12,182, Feb. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 838,524, Oct. 3, 1977, abandoned, which is a division of Ser. No. 801,876, May 31, 1977, Pat. No. 4,133,876. This application Feb. 22, 1980, Ser. No. 123,852
Int. Cl.³ A61K 35/00, 31/35
U.S. Cl. 424—121 9 Claims



1. A method of treating dysentery in swine which comprises orally administering to swine in need of said treatment an

effective amount of a compound selected from the group consisting of (1) antibiotic A-32887 which has the following structure:



(2) the acetyl ester derivative of A-32887, which has an approximate empirical formula of $C_{50-51}H_{82-88}O_{18-19}$, and which in its Na-K salt form has a molecular weight of about 988, a melting point of about 127°–129° C., and an approximate R_f value of 0.40 on silica-gel TLC in benzene:ethyl acetate (1:1), and an infrared absorption spectrum as shown in FIG. 4 of the drawings; (3) the n-butyryl ester derivative of A-32887 which has an approximate empirical formula of $C_{52-53}H_{86-92}O_{18-19}$, and which in its Na-K salt form has a molecular weight of about 1016, a melting point of about 59°–62° C., an approximate R_f value of 0.64 on silica-gel TLC in benzene:ethyl acetate (1:1), and an infrared absorption spectrum as shown in FIG. 5 of the drawings; and (4) the pharmaceutically-acceptable salts of antibiotic A-32887 and of the acetyl and n-butyryl ester derivatives of antibiotic A-32887.

4,331,659

ANTIBIOTIC U-62,162 AND PROCESS OF MAKING

Herman Hoeksema, and Libor Slechta, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 10, 1980, Ser. No. 185,130

Int. Cl.³ A61K *35/00*; C12P *1/06*; C12R *1/465*; A61K *35/74*

U.S. Cl. 424—122 **8 Claims**

1. Antibiotic U-62,162, which is active against Gram-positive bacteria, and which in its essentially pure crystalline form has the following characteristics:

(a) molecular weight of 419.2303 (high resolution mass spectrometry);

(b) is soluble in lower alcohols (1–4 carbons), esters, for example, ethylacetate and methylacetate, ethers, for example, diethylether, tetrahydrofuran and dioxane, aromatic hydrocarbons, for example, benzene and toluene, dimethylformamide and dimethylsulfoxide, and lower ketones (3–6 carbons);

(c) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings;

(d) a characteristic UV spectrum as shown in FIG. 2 of the drawings;

(e) a characteristic ^{1}H-NMR spectrum as shown in FIG. 3 of the drawings;

(f) a characteristic ^{13}C-NMR spectrum as shown in FIG. 4 of the drawings;

(g) a melting point of 96°–98°;

(h) a molecular formula $C_{23}H_{33}NO_6$;

(i) an elemental composition as follows: $C_{65.83}H_{7.93}N_{3.34}$; and base addition salts thereof.

2. A process for preparing antibiotic U-62,162 which comprises cultivating *Streptomyces verdensis* Dietz and Li sp. n., having the identifying characteristics of NRRL 12256, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic U-62,162 activity is imparted to said medium.

4,331,660

FISH EGG FUNGICIDE

Rodney L. Balhorn, P.O. Box 751, Livermore, Calif. 94550

Filed Mar. 2, 1981, Ser. No. 239,395

Int. Cl.³ A01N *59/16*

U.S. Cl. 424—131 **5 Claims**

1. A method for inhibiting the growth of fungus on fish eggs and young fry in hatching water during the hatching of fish, comprising adding a fungicidally effective amount of a chromium compound selected from the group consisting of sodium dichromate, potassium dichromate and chromium trioxide to the hatching water in a concentration in the range of about 0.2 to about 0.5 g/gal.

4,331,661

BOMBESIN ANALOGS

Walter E. Marki, Zurich, Switzerland; Marvin R. Brown, and Jean E. F. Rivier, both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Oct. 3, 1980, Ser. No. 193,621

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A peptide or a nontoxic salt thereof, said peptide having the formula:

$$R_1\text{-}R_2\text{-Trp-Ala-Val-}R_3\text{-His-Leu-Met-NH}_2$$

wherein: R_1 is an acyl moiety selected from the group consisting of formyl, acetyl, propionyl, acrylyl and benzoyl; R_2 is selected from the group consisting of Gly and the D- and L-isomers of Ala, Asn, Gln, His, Leu, Met, Phe, Ser, Thr and Val; R_3 is selected from the group consisting of D-Ala and Gly.

4,331,662

METHODS FOR THE TREATMENT OF VIRAL INFECTIONS

Fritz Eckstein; John B. Hobbs, both of Göttingen, Fed. Rep. of Germany; Lambert Skoog, Stockholm, Sweden; Gunnar Bjursell, Arhus, Denmark, and Lars Thelander, Stockholm, Sweden, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 786,323, Apr. 11, 1977, abandoned. This application Feb. 4, 1980, Ser. No. 118,241

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2627076

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **1 Claim**

1. A method for the treatment of virus infections by inhibition of DNA synthesis comprising administering to an afflicted subject in an amount effective in the treatment of virus infection by inhibition of DNA synthesis of 2'-azido-2'-desoxycytidine.

4,331,663

4α,5α-EPOXY-3,20-DIOXOPREGNANE-2α,16α-DICARBONITRILE AND INTERMEDIATES AND PROCESS FOR PREPARATION, METHOD OF USE AND COMPOSITIONS THEREOF

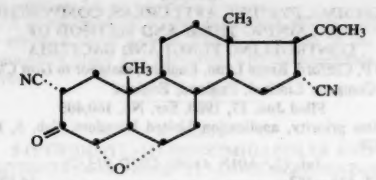
Robert G. Christiansen, Schodack; Malcolm R. Bell, East Greenbush, and Harry P. Schane, Jr., Chatham, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,294

Int. Cl.³ A61K *31/58*; C07J *17/00*

U.S. Cl. 424—241 **10 Claims**

1. 4α,5α-Epoxy-3,20-dioxopregnane-2α,16α-dicarbonitrile having the structural formula



9. The method of inhibiting mineralocorticoid production and/or action in a primate having an undesirably high plasma mineralocorticoid concentration which comprises administering to the primate an amount of 4α,5α-epoxy-3,20-dioxopregnane-2α,16α-dicarbonitrile sufficient to reduce the plasma mineralocorticoid concentration.

4,331,664

SYN ISOMER OF 7-[2-CYCLO(LOWER) ALKOXYIMINO-2-(2-AMINO-OR SUBSTITUTED AMINOTHIAZOL-4-yl)ACETAMIDO]-3-LOWER ALKANOYLOXYMETHYL OR HETEROCYCLICTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

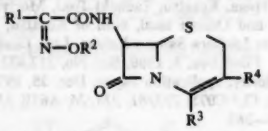
Continuation-in-part of Ser. No. 877,848, Feb. 15, 1978, which is a continuation-in-part of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Feb. 20, 1980, Ser. No. 123,164

Claims priority, application United Kingdom, Apr. 12, 1976, 14916/76; Japan, Oct. 19, 1976, 51/125826; United Kingdom, Jun. 7, 1976, 23490/76

Int. Cl.³ A61K *31/545*; C07D *501/56*

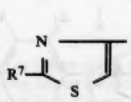
U.S. Cl. 424—246 4 Claims

1. Syn isomer of 7-[2-cyclopentyloxyimino-2-(2-amino- or substituted aminothiazol-4-yl)acetamido]-3-heterocyclicthiomethyl-3-cephem-4-carboxylic acid compounds of the formula:



wherein

R^1 is



R^7 is amino or lower alkanoylamino;

R^2 is cyclopentyl;

R^3 is carboxy; and

R^4 is thiadiazolylthiomethyl and pharmaceutically acceptable salts thereof.

4. A pharmaceutically antibacterial composition comprising a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,331,665

CEPHEM AND CEPHAM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 116,984, Jan. 30, 1980, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979, abandoned. This application Mar. 7, 1980, Ser. No. 128,260

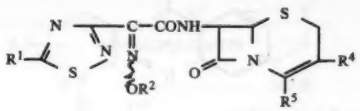
Claims priority, application United Kingdom, Dec. 29, 1978, 50334/78; Oct. 12, 1979, 7935538

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ A61K *31/545*

U.S. Cl. 424—246 12 Claims

1. 7-Substituted-3-cephem-4-carboxylic acid of the formula:



wherein

R^1 is amino or a protected amino;

R^2 is cycloalkyl, cyclo(lower)alkenyl, carboxy(lower)-alkyl or protected carboxy(lower)alkyl;

R^4 is pyridinium(lower)alkyl; pyridinium(lower)alkyl substituted with carbamoyl; thiadiazolylthio(lower)alkyl; thiadiazolylthio(lower)alkyl substituted with one lower alkyl; tetrazolylthio(lower)alkyl; or tetrazolylthio(lower-)alkyl substituted with one hydroxy(lower)alkyl; and

R^5 is carboxy or a protected carboxy; wherein R^5 is COO^- when R^4 is pyridinium(lower)alkyl or substituted pyridinium(lower)alkyl; and pharmaceutically acceptable salt thereof.

12. An antibacterial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,331,666

3-[(8-CARBOXY-6-TETRAZOLO[1,5-b]PYRIDAZINYL)-THIOMETHYL]-7-[2-(2-AMINO-4-THIAZOLYL)-2-METHOXYIMINO-ACETAMIDO]-3-CEPHEM-4-CARBOXYLIC ACID

Giuliano Nannini; Ettore Perrone, both of Bresso; Ferruccio Casabuona, Monza, and Silvio Grasso, Bresso, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Apr. 8, 1980, Ser. No. 138,338

Claims priority, application United Kingdom, May 11, 1979, 7916376

Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 5 Claims

1. 3-[(8-carboxy-6-tetrazolo[1,5-b]pyridazinyl)-thiomethyl]-7-[2-(2-amino-4-thiazolyl)-2-methoxyiminoacetamido]-3-cephem-4-carboxylic acid and its pharmaceutically and veterinarily acceptable salts.

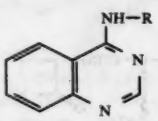
5. An anti-bacterial pharmaceutical or veterinary composition comprising a compound of claim 1 or 2 and a pharmaceutically or veterinarily acceptable carrier therefor.

4,331,667
QUINAZOLINES FOR CONTROLLING ECTOPARASITES

Rupert Schneider, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Feb. 4, 1981, Ser. No. 231,001
Claims priority, application United Kingdom, Feb. 8, 1980, 8004276
Int. Cl.³ A61K *31/505*
U.S. Cl. 424—251 10 Claims

1. A method of preventing or combatting ectoparasites of the order Acari in animal livestock which comprises topically applying to the host animal an effective amount of a compound of formula I,



I

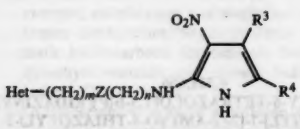
wherein R is C_{8-11}alkyl.

4,331,668
2-HETEROCYCLIC ALKYLAMINO-3-NITROPYRROLES

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 43,786, May 30, 1979, Pat. No. 4,238,494.
This application Jun. 16, 1980, Ser. No. 159,524
Claims priority, application United Kingdom, May 30, 1978, 24117/78; Aug. 4, 1978, 32313/78
Int. Cl.³ A61K *31/425, 31/41, 31/44;* C07D *417/12*
U.S. Cl. 424—263 6 Claims

1. A compound represented by Structure 1:



Structure 1

in which

Het is selected from the group consisting of thiazole, isothiazole, 1,2,5-thiadiazole and 1,3,4-thiadiazole rings optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that

m+n is 3 or 4;

R^3 is hydrogen, lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl, aryl being phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl optionally substituted by lower alkyl or lower alkoxy; and

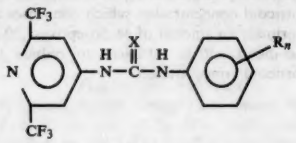
R^4 is hydrogen or lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,331,669
FUNGICIDAL PYRIDYL ARYLUREAS, COMPOSITIONS CONTAINING THEM AND METHOD OF CONTROLLING FUNGI AND BACTERIA

David P. Clifford, Kings Lynn, England, assignor to Dow Chemical Company Limited, England, England

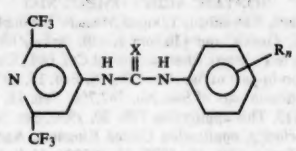
Filed Jun. 17, 1980, Ser. No. 160,405
Claims priority, application United Kingdom, Feb. 5, 1980, 8003828
Int. Cl.³ A01N *43/40;* C07D *213/75*
U.S. Cl. 424—263 14 Claims

1. A compound corresponding to the formula



wherein R is halogen, trichloromethyl, trifluoromethyl, nitro, cyano, C_1–C_4 alkyl or C_1–C_4 alkoxy; X is O or S and n is an integer of from 1 to 5.

11. A method of controlling fungal or bacterial organisms, which method comprises contacting the organisms with a fungicidally or bactericidally effective amount of a composition comprising an inert carrier in intimate admixture with a compound corresponding to the formula



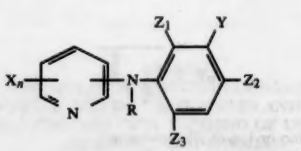
wherein R is halogen, trichloromethyl, trifluoromethyl, nitro, cyano, C_1–C_4 alkyl or C_1–C_4 alkoxy; X is O or S and n is an integer of from 1 to 5.

4,331,670
PYRIDYLANILINES

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Takahiro Haga, Kusatsu; Tadaaki Toki, Moriyama; Kuniaki Nagatani, and Osamu Imai, both of Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Dec. 3, 1980, Ser. No. 212,432
Claims priority, application Japan, Dec. 25, 1979, 54-168574
Int. Cl.³ C07D *213/61, 213/26;* A61K *31/44*
U.S. Cl. 424—263 19 Claims

1. A pyridylaniline compound represented by the following formula (I):



(I)

wherein X is a trifluoromethyl group, a halogen atom, a lower alkyl group or a lower alkoxy group; n is an integer of 1 to 4; R is a hydrogen atom or an acetyl group; Y is a hydrogen atom, a halogen atom, a lower alkoxy group, a lower alkylthio group or a hydroxy group; Z_1, Z_2 and Z_3 are a trifluoromethyl group or a nitro group, with the proviso that at least one X is trifluoromethyl and with the proviso that when the X substitu-

tion pattern is 3-chloro-5-trifluoromethyl, Y in addition optionally is azido or 2,3, or 4-hydroxyphenoxy.

11. A composition for combatting insects, which comprises: an effective insect growth inhibiting amount of the compound of claim **1** in admixture with an acceptable adjuvant.

4,331,671
5-(PYRIDINYL)-1H-BENZIMIDAZOLES AND 1-HYDROXY-6-(PYRIDINYL)-1H-BENZIMIDAZOLES AND THEIR CARDIOTONIC USE

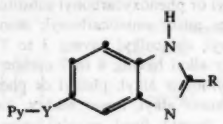
George V. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,752

Int. Cl.³ A61K *31/44;* **C07D** *401/04, 401/06*

U.S. Cl. 424—263 **18 Claims**

1. 2-R-5-(Py-Y)-1H-benzimidazole having the formula



where Y is a direct linkage or lower-alkylene having one or two carbon atoms, R is hydrogen or lower-alkyl, and Py is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, or a pharmaceutically-acceptable acid-addition salt thereof.

9. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering to such patient a cardiotonically-effective amount of 2-R-5-(Py-Y)-1H-benzimidazole or a pharmaceutically-acceptable acid-addition salt thereof, where Y is a direct linkage or lower-alkylene having one or two carbon atoms, R is hydrogen or lower-alkyl, and Py is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,331,672
5-(PYRIDINYL)PYRIDINE-2-HYDRAZINES, THEIR PREPARATION AND THEIR CARDIOTONIC USE

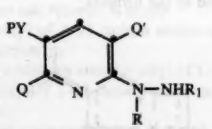
George Y. Lesher; Chester J. Opalka, Jr., both of Schodack, and Donald F. Page, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 135,100, Mar. 28, 1980. This application Feb. 4, 1981, Ser. No. 231,312

Int. Cl.³ C07D *401/04;* **A61K** *31/44*

U.S. Cl. 424—263 **14 Claims**

1. A 2-[R_1NHN(R)]-3-Q'-5-PY-6-Q-pyridine having the formula



wherein Q is hydrogen or lower-alkyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, Q' is hydrogen or halo, R is hydrogen, lower-alkyl or lower-hydroxyalkyl, and R_1 is hydrogen, or when R is other than hydrogen R_1 is the same as R, or pharmaceutically-acceptable acid-addition or cationic salt thereof.

10. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such a patient a cardiotonically-effective amount of 2-[R_1NHN(R)]-3-Q'-5-PY-6-Q-pyridine or pharmaceutically-acceptable acid-addition salt thereof, where Q is hydrogen or lower-alkyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, Q' is hydrogen or halo, R is hydrogen, lower-alkyl or lower-hydroxyalkyl, and R_1 is hydrogen or when R is other than hydrogen R_1 is the same as R.

4,331,673
PYRIDINIUM SALTS

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

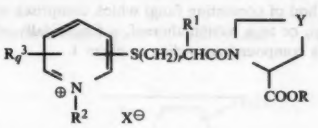
Filed Apr. 16, 1981, Ser. No. 254,801

Claims priority, application United Kingdom, Apr. 30, 1980, 8014281

Int. Cl.³ C07D *213/62;* **A61K** *31/44*

U.S. Cl. 424—263 **5 Claims**

1. A compound of the formula



(I)

wherein the sulphur is bonded to the pyridinium ring at position 2 or 4, Y is —CH_2—, R represents hydrogen, or lower alkyl group, or other carboxylic protecting group; R^1 represents hydrogen or lower alkyl; R^2 represents lower alkyl, aryl of 6 to 10 carbon atoms or aralkyl or 7 to 11 carbon atoms; R^3 represents hydrogen or a substituent selected from lower alkyl, halogen and lower alkoxy; q and r are each 1 or 2; and $X^{\ominus}$ represents a halide ion or an organosulphonate ion.

5. A pharmaceutical composition comprising an anti-hypertensive effective amount of a compound of formula I as claimed in claim **1** and a pharmaceutically acceptable carrier.

4,331,674
COMBATING FUNGI WITH 4-PHENOXY-4-(AZOLYL-1-YL)-BUTANOIC ACID DERIVATIVES

Wolfgang Krämer; Jörg Stetter; Karl H. Büchel, all of Wuppertal; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

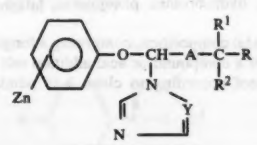
Filed Jul. 27, 1977, Ser. No. 819,533

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1976, 2635663

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 424—269 **10 Claims**

1. A 4-phenoxy-4-(azol-1-yl)-butanoic acid derivative or a salt thereof, said derivative being of the formula



in which

A is —CO— or CH(OH)—,

Y is —CH= or —N=,

Z is halogen, alkyl with 1 to 4 carbon atoms, alkenyl with 2 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, alkoxycarbonyl with 1 to 5 carbon atoms in the alkoxy part, amino, cyano, nitro, or phenyl or phenoxy either of which may be substituted by halogen, amino, cyano, nitro or alkyl with 1 or 2 carbon atoms, or

Z represents phenylalkyl with 1 or 2 carbon atoms in the alkyl part and which may be substituted phenyl part by halogen, nitro or cyano,

R is cyano, —CO—OR^3 or —CO—NR^4R^5,

R^1 and R^2 each independently is alkyl with 1 to 4 carbon atoms, phenyl or phenyl substituted by halogen, alkyl with 1 or 2 carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, or conjointly one tetramethylene or pentamethylene;

R^3 is alkyl with 1 to 6 carbon atoms,

R^4 is hydrogen, alkyl with 1 to 4 carbon atoms, phenyl or phenyl substituted by halogen, alkyl with 1 or 2 carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, and

R^5 is hydrogen or alkyl with 1 to 4 carbon atoms, and

n is 0, 1, 2, 3, 4 or 5.

8. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim **1**.

4,331,675

COMBATING FUNGI WITH TRIAZOLYL-ALKENES

Erik Regel; Wilfried Draber; Karl H. Büchel, all of Wuppertal; Paul-Ernst Frohberger, Leverkusen; Wilhelm Brandes, Leichlingen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

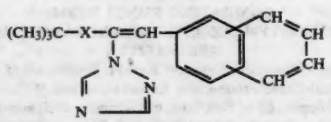
Filed Jul. 2, 1980, Ser. No. 166,268

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929602

Int. Cl.[3] **A01N** *43/64;* **C07D** *249/08*

U.S. Cl. 424—269 **7 Claims**

1. A triazolyl-alkene of the formula



in which X is a keto radical or a —CH(OH)— radical, or a physiologically acceptable acid addition salt thereof with a hydrogen halide acid, phosphoric acid, nitric acid, sulphuric acid, a monofunctional or bifunctional carboxylic acid or hydroxycarboxylic acid or a sulphonic acid, or a metal salt complex thereof in which the metal is copper, zinc, manganese, magnesium, tin, iron or nickel and the anion is derived from hydrochloric, hydrobromic, phosphoric, nitric or sulphuric acid.

4. A fungicidal composition, comprising a fungicidally effective amount of a compound or acid addition salt or metal salt complex thereof according to claim **1** in admixture with a diluent.

4,331,676

THIA-AZA COMPOUNDS WITH A β-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

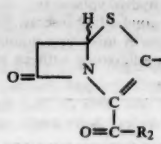
Filed May 4, 1978, Ser. No. 902,639

Claims priority, application Luxembourg, May 9, 1977, 77306

Int. Cl.[3] **C07D** *499/00*

U.S. Cl. 424—270 **38 Claims**

1. 2-Penem-3-carboxylic acid compounds of the formula



(I)

characterised in that R_1 represents hydrogen, lower alkyl, loer alkyl substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, mono- di-lower alkylamino, lower alkyene-amino, acetylamino, amino acylated by tert.butoxycarbonyl, benzyloxycarbonyl, p-nitro-benzyloxycarbonyl or phenoxyacetyl; lower alkoxycarbonyl; benzyloxy-, p-nitrobenzyloxy- or diphenyl-methoxycarbonyl; phenoxycarbonyl or phenoxycarbonyl substituted by halogen, lower alkoxy or nitro; aminocarbonyl; mono- di-lower alkylaminocarbonyl; cycloalkyl having 3 to 7 carbon atoms; cycloalkyl-lower alkyl having 4 to 7 carbon atoms; phenyl; naphthyl; phenyl-lower alkyl; phenyl or phenyl-lower alkyl substituted by lower alkyl, lower alkoxy, halogen, nitro or amino; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cycloalkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower alkylthio, lower alkenylthio, cycloalkylthio, having 3 to 7 carbon atoms, cycloalkyl lower alkylthio, phenylthio or phenyl-lower alkylthio substituted by hydroxy, lower alkoxy, lower-alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, mono- or di-lower alkylamino, lower alkanoylamino or amino disubstituted by lower alkylene, and R_2 is hydroxy or a radical R_2^A, which, together with the carbonyl grouping —C(=O)—, forms a conventional protected carboxy group, 1-oxides thereof, and pharmaceutically acceptable salts thereof, in racemic and optically active form.

4,331,677

7-OXO-4-1-AZA-BICYCLO-[3,2,0]-HEPTANE DERIVATIVES

Maurizio Foglio; Giovanni Franceschi; Cosimo Scarafile, and Federico Arcamone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

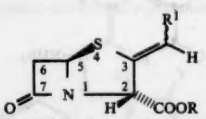
Filed Nov. 19, 1979, Ser. No. 95,790

Claims priority, application United Kingdom, Nov. 24, 1978, 45966/78

Int. Cl.[3] **C07D** *499/00;* **A61K** *31/425*

U.S. Cl. 424—270 **4 Claims**

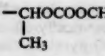
1. A compound of the formula



(I)

wherein

R is a hydrogen atom, an alkyl having from 1 to 5 carbon atoms, trichloroethyl, benzyl, p-nitrobenzyl, diphenylmethyl, acetoxymethyl, pivaloyloxymethyl, phthalidyl, trimethylsilyl, or a group of formula



R^1 is —CH_2OH, —CH_2OCOR^2, —$COOR^2$, —CHO,

—CH_2SH, —CH_2SR^4, —CH_2NH_2, —CH_2NHCOR^2 in which R^2 is an alkyl having from 1 to 5 carbon atoms, and R^4 is benzyl, trityl or trialkylsilyl.

4,331,678
CARBAMOYL PYRAZOLE COMPOUNDS AND THEIR PESTICIDAL APPLICATION

Norman J. De'Ath, and John Gillon, both of Cambridge, England, assignors to FBC Limited, Hauxton, England

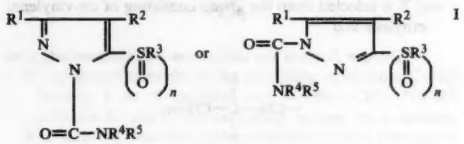
Filed Jan. 14, 1980, Ser. No. 111,985

Claims priority, application United Kingdom, Jan. 18, 1979, 7901889

Int. Cl.³ A01N *43/56*; C07D *231/18*

U.S. Cl. 424—273 P **12 Claims**

1. A compound which is a carbamoyl pyrazole of formula



(a) (b)

or an acid addition salt thereof, wherein

R^1 represents alkyl of 1–4 carbon atoms;

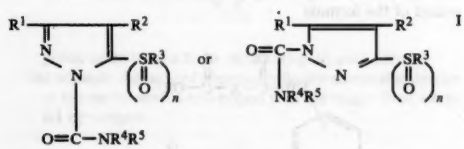
R^2 represents a hydrogen atom;

R^3 represents alkyl of 1–4 carbon atoms;

R^4 and R^5 are the same or different and each represents methyl or ethyl; and

n represents 0 or 1.

11. A method of combating insects, acarides and/or nematodes at a locus infested or liable to be infested with them, which method comprises applying to the locus an insect-, acaride- and/or nematode-combating amount of a compound which is a carbamoyl pyrazole of formula



(a) (b)

or an acid addition salt thereof, wherein

R^1 represents alkyl of 1–15 carbon atoms or cycloalkyl of 3–6 carbon atoms;

R^2 represents a hydrogen atom or alkyl of 1–6 carbon atoms;

R^3 represents alkyl of 1–15 carbon atoms or alkenyl of 2–6 carbon atoms;

R^4 and R^5 are the same or different and each represents alkyl of 1–6 carbon atoms; and

n represents 0, 1 or 2.

4,331,679
(3-ARALKYLAMINO-2-OR-PROPOXY) HETEROCYCLIC COMPOUNDS

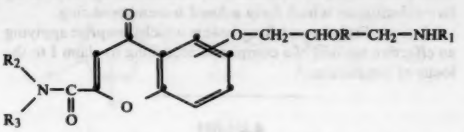
Yves Girard, Pierrefonds, Canada, assignor to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

Filed Dec. 23, 1980, Ser. No. 219,729

Int. Cl.³ A61K *31/35*; C07D *311/04*

U.S. Cl. 424—283 **13 Claims**

1. A compound of the formula:

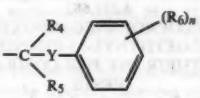


individual optical isomers and pharmaceutically acceptable salts thereof wherein

R is H or

wherein L is phenyl or C_1–C_3alkyl and

R_1 is



wherein

R_4 and R_5 are independently selected from H and C_1–C_3alkyl,

Y is CH_2O, CH_2 or $(CH_2)_2$ and

R_6 is H, C_1–C_3alkyl, halogen, OH or OCH_3 and n is 1 or 2, and

R_2 and R_3 are H or lower alkyl.

13. A method of (1) treating hypertension (2) reducing intraocular pressure or (3) treating asthma by administering an effective amount of a claim **1** compound in suitable dosage form.

4,331,680
PESTICIDAL COMPOUNDS, COMPOSITIONS AND METHODS

David P. Giles, Loughborough; John C. Kerry, Edwalton; Antonin Kozlik, Clifton; Bryan H. Palmer, Burton Joyce; Stephen W. Shutler, Hucknall, and Robert J. Willis, Carlton, all of England, assignors to The Boots Company, Nottingham, England

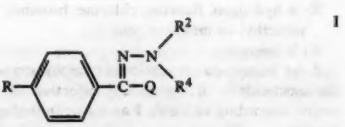
Filed Aug. 25, 1980, Ser. No. 181,278

Claims priority, application United Kingdom, Aug. 31, 1979, 7930356

Int. Cl.³ A61K *31/255*; C07C *143/68*

U.S. Cl. 424—303 **11 Claims**

1. Compounds of formula I



in which Q is p-halophenyl or p-trifluoromethylphenyl and R is R^3SO_2O where R^3 is alkyl or haloalkyl and R^2 and R^4 together form the group $=CR^5R^6$, where R^5 and R^6 may be the same or different and are hydrogen, alkyl, alkenyl, alkoxy, alkenyloxy groups (which groups, other than hydrogen, may be optionally substituted by halo, phenyl, phenoxy, cyano, alkylamino or alkoxycarbonyl) monoalkylamino, dialkylamino, monocycloalkyloamino, cycloalkyl (optionally substituted by C_{1-4} alkyl), phenyl, phenoxy, pyridyl or thienyl or R^5 and R^6 together with the carbon to which they are attached form a 4–7 carbon membered ring, which may optionally be

unsaturated and may optionally be substituted by alkyl or by two substituents which form a fused 6-membered ring.

10. A method of combating insects which comprise applying an effective amount of a compound according to claim 1 to the locus of the insects.

4,331,681

METHOD FOR CONTROLLING ALGAE

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 29, 1980, Ser. No. 221,118

Int. Cl.³ A01N *37/34*

U.S. Cl. 424—304 **1 Claim**

1. A method for controlling or inhibiting the growth of algae comprising applying to the algae or a locus where control is desired an algicidally effective amount of the compound 3-(4-tolylsulfonyl)acrylonitrile.

4,331,682

CYCLOPROPANECARBOXYLIC ACID-α-HALOETHYNYL-M-PHENOXYBENZYL ESTERS AND THEIR USE FOR COMBATING INSECT PESTS

Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Saleem Farooq, Ettingen; Laurenz Gsell, Basel; Odd Kristiansen, Möhlin, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

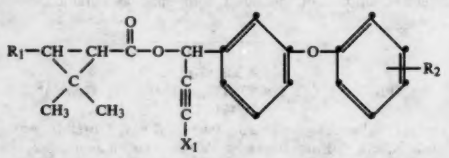
Filed Mar. 2, 1981, Ser. No. 239,868

Claims priority, application Switzerland, Mar. 14, 1980, 2014/80; Sep. 16, 1980, 6928/80

Int. Cl.³ C07C *67/943;* A01N *53/00*

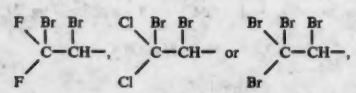
U.S. Cl. 424—305 **8 Claims**

1. A compound of the formula



wherein

R_1 is



R_2 is hydrogen, fluorine, chlorine, bromine, methyl, trifluoromethyl or methoxy, and

X_1 is halogen.

7. An insecticidal or acaricidal composition which comprises an insecticidally or acaricidally effective amount of a compound according to claim 1 as active ingredient, and suitable carriers.

4,331,683

CARBOXAMIDE COMPOUNDS AS SRS-A ANTAGONISTS

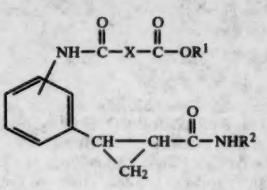
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 201,894, Oct. 29, 1980, Pat. No. 4,296,129. This application Aug. 13, 1981, Ser. No. 292,387

Int. Cl.³ A61K *31/24;* C07C *101/447, 101/453*

U.S. Cl. 424—309 **9 Claims**

1. A carboxamide compound of the formula

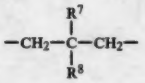


and the pharmaceutically-acceptable salts thereof; wherein

R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons, and $-CH_2-CH_2-NR^3R^4$, wherein R^3 and R^4 are each alkyl having 1 to 3 carbons;

R^2 is selected from the group consisting of alkyl having 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

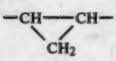
and X is selected from the group consisting of cis-vinylene, ethylene and



wherein

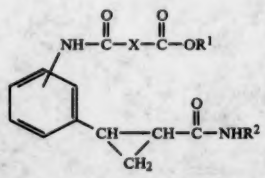
R^7 and R^8 are each selected from the group consisting of hydrogen and methyl;

with the proviso that the two groups attached to the



group must have a trans relationship to each other.

8. A method of antagonizing the effect of slow-reacting substance of anaphylaxis in a human subject, which comprises administering to said human subject a slow-reacting substance of anaphylaxis antagonizing amount of a carboxamide compound of the formula

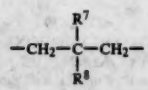


or a pharmaceutically-acceptable salt thereof; wherein

R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons, and $-CH_2-CH_2-NR^3R^4$, wherein R^3 and R^4 are each alkyl having 1 to 3 carbons;

R^2 is selected from the group consisting of alkyl having 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

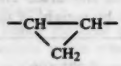
and X is selected from the group consisting of cis-vinylene, ethylene and



wherei

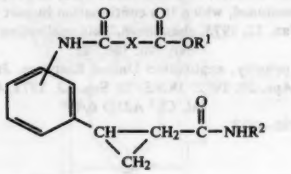
R^7 and R^8 are each selected from the group consisting of hydrogen and methyl;

with the proviso that the two groups attached to the



group must have a trans relationship to each other.

9. A pharmaceutical composition, which comprises a pharmaceutically-acceptable carrier and a carboxamide compound of the formula

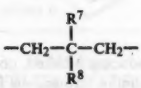


or a pharmaceutically-acceptable salt thereof; wherein

R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons, and $—CH_2—CH_2—NR^3R^4$, wherein R^3 and R^4 are each alkyl having 1 to 3 carbons;

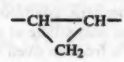
R^2 is selected from the group consisting of alkyl having 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

and X is selected from the group consisting of cis-vinylene, ethylene and



wherein R^7 and R^8 are each selected from the group consisting of hydrogen and methyl;

with the proviso that the two groups attached to the



group must have a trans relationship to each other;

and wherein the ratio of pharmaceutically-acceptable carrier to the carboxamide compound is in the range from 1:6 to 6:1 by weight.

4,331,684

COMPOUNDS HAVING ANTIDEPRESSIVE ACTIVITY

Ulf H. A. Lindberg; Svante B. Ross, both of Södertälje; Seth-Olov Thorberg, Järna, and Sven O. Ögren, Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

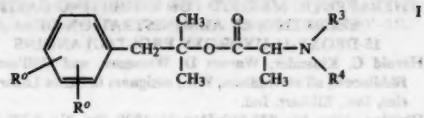
Division of Ser. No. 932,669, Aug. 8, 1978, Pat. No. 4,237,311, which is a continuation of Ser. No. 757,484, Jan. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 554,497, Mar. 3, 1975, abandoned. This application May 28, 1980, Ser. No. 153,932

Claims priority, application Sweden, Mar. 11, 1974, 7403176

Int. Cl.³ A61K *31/22*

U.S. Cl. 424—311 **10 Claims**

1. A method for the treatment of depressive disorders related to neuronal uptake of 5-hydroxytryptamine, the method comprising administration to a host in need of such treatment of a therapeutically effective amount of a compound of the formula



I

or pharmaceutically acceptable acid addition salt thereof, in which formula the groups R^0 are the same or different and are selected from the group consisting of hydrogen, halogen and methyl and the groups R^3 and R^4 are hydrogen.

4,331,685

CONTROL OF PLANT VIRUS DISEASES

Takuro Tokuda; Susumu Ikeda, and Yoshikazu Kubota, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,502

Claims priority, application Japan, May 12, 1978, 53/56345

Int. Cl.³ A01N *21/00, 25/12*

U.S. Cl. 424—325 **3 Claims**

1. A method for combatting and preventing viral diseases in plants belonging to the monocotyledenous and dicotyledenous angiosperms which comprise administering to said plants a composition comprising an antivirally effective amount of at least one N-higher alkylalkanolamine of the formula:

$$R^1—NH—R^2—OH$$

wherein

R^1 is an alkyl group having 8 to 18 carbon atoms and

R^2 is an alkylene group having 2 to 6 carbon atoms, or one of the salts thereof.

4,331,686

TREATMENT OF OTITIS EXTERNA IN DOGS WITH BETA-(1-ADAMANTYL)-ALPHA,ALPHA-DIMETHYLETHYLAMINE

Slobodan M. Djurickovic, Middletown, Md., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 28, 1981, Ser. No. 297,395

Int. Cl.³ A61K *31/13*

U.S. Cl. 424—325 **7 Claims**

1. A method for treating Otitis Externa in dogs comprising administering to dogs, a dosage effective to alleviate the symptoms of the infection, a composition of beta-(1-adamantyl)-alpha,alpha-dimethylethylamine or its acid salt and at least one pharmaceutically acceptable carrier, wherein the amine is from about 0.01 to about 95% by weight of the composition.

4,331,687

TREATMENT OF PARKINSON'S DISEASE

Karl-Dieter Voelger, Bickenbach, and Ilse Treudler, Messel, both of Fed. Rep. of Germany, assignors to Röhm Pharma GmbH, Weiterstadt, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,161

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3008993

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **5 Claims**

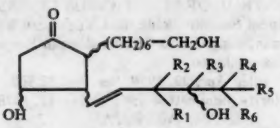
1. A method for the treatment of Parkinsonism in a patient suffering therefrom, which method comprises orally or parenterally administering to said patient an effective amount of an active agent selected from the group consisting of (+)-trans-2-phenylcyclopropyl amine and physiologically acceptable acid addition salts thereof, said agent being essentially free of the corresponding (−)-enantiomer and its salts.

4,331,688
THERAPEUTIC METHOD FOR INHIBITING GASTRIC SECRETION BY ADMINISTRATION OF 15-DEOXY-16-HYDROXY PROSTAGLANDINS

Harold C. Kluender; Warren D. Woessner, and William G. Biddlecom, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 973,010, Dec. 26, 1978, Pat. No. 4,275,224. This application Dec. 12, 1980, Ser. No. 215,802
Int. Cl.³ A61K *31/12*
U.S. Cl. 424—331 6 Claims

1. A therapeutic method for inhibiting gastric secretion in an individual for whom such therapy is indicated, comprising: administering to the individual an effective gastric inhibiting amount of a compound having the formula:

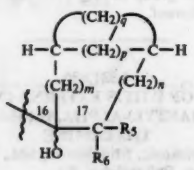


wherein:

R_1 is hydrogen;

R_2 is hydrogen or together with R_4 is an alkylene chain of 2 carbon atoms such that a cycloalkyl of 5 carbon atoms inclusive is formed;

R_3 is selected from the group consisting of hydrogen and methyl, or together with R_4 is an alkyl substituted alkylene chain of 2 carbon atoms, to form an alkyl substituted cyclobutyl, or together with R_4 is a bicycloalkyl moiety having the formula:



such that a bicycloalkyl compound is formed, wherein m and n are integers having a value of 0, p is an integer having a value of 1 and q is an integer having a value of 2;

R_4 is hydrogen or methyl, or together with R_2 and R_3 forms a cycloalkyl or bicycloalkyl as defined above, with the proviso that when R_5 is methyl, R_4 is hydrogen;

R_5 is hydrogen or methyl; and

R_6 is hydrogen or a straight-chain alkyl having 3 carbon atoms.

4,331,689
ALCOHOL-STABLE, LOW PH-STABLE FAT EMULSION PRODUCT

Gale A. Shemwell, Van Nuys, Calif., assignor to Carnation Company, Los Angeles, Calif.

Filed Dec. 29, 1980, Ser. No. 221,092
Int. Cl.³ C12G *3/06*; A23L *1/19*; A23C *11/00*
U.S. Cl. 426—98 10 Claims

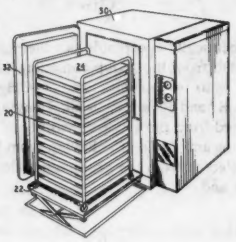
1. A dried, protein-free fat emulsion product which upon reconstitution with an aqueous medium forms an oil-in-water emulsion which is stable in the presence of an alcohol concentration of over 8% (vol/wt) with a pH in the range of 2.5–5.0, said dried emulsion product comprising

from about 57% to 65% by weight of a water soluble carbohydrate, and from 15% to 25% by weight of an edible fat or oil having an average particle size of about 1–3 microns in diameter, with said fat particles being encapsulated by a lipophilic starch derivative, the amount of said lipophilic starch derivative in the dried emulsion product being about 50% to 85% by weight of the fat or oil.

4,331,690
TREATMENT OF FOODSTUFFS

William Bradshaw, Clitheroe, England, assignor to Tweedy of Burnley Limited, Burnley, England

Continuation of Ser. No. 937,177, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 737,158, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 557,071, Mar. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 323,134, Jan. 12, 1973, abandoned. This application Jul. 7, 1980, Ser. No. 166,742
Claims priority, application United Kingdom, Jan. 14, 1972, 1859/72; Apr. 20, 1972, 18265/72; Sep. 13, 1972, 42453/72
Int. Cl.³ A21D *6/00*
U.S. Cl. 426—233 10 Claims



9. A method of producing a baked, completely cooked and cooled moisture containing farinaceous foodstuff article comprising the steps of:

heating an uncooked mass of said foodstuff only to a point at which starch gelantinisation and gluten coagulation have commenced but have not been fully completed, so that said article would physically collapse if submitted to cooling in normal atmospheric conditions;

terminating heating of said article at said point;

transferring the article from an oven in which it was baked to a vacuum cooling chamber; said transferring step being effected sufficiently rapidly to avoid an appreciable modification of the physical characteristics of the article after baking and prior to cooling;

cooling said article by applying vacuum thereto in said chamber to extract moisture from the article said cooling step being initiated at substantially a level of vacuum slightly below the saturated vapour pressure coinciding with the oven discharge temperature of the article; and

deliberately changing said gas extraction rate of said system for applying vacuum during the application of the vacuum, in response to a predetermined level of a physical property of the gases in said chamber, to control the moisture extraction rate from the article.

4,331,691
VACUUM PRESSURE INFILTRATION PROCESS FOR FRESH PRODUCE

Bachettira W. Poovaiah, Pullman, and Gary A. Moulton, Mt. Vernon, both of Wash., assignors to Washington State University Research Foundation, Inc., Pullman, Wash.

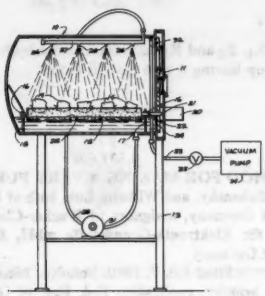
Filed Jul. 10, 1980, Ser. No. 168,438
Int. Cl.³ A23B *7/16*
U.S. Cl. 426—302 5 Claims

1. A process for applying food grade liquid material to the interior of whole fresh produce having porous or perforated skin surfaces without submerging said produce in said liquid material, comprising the following steps:

subjecting the produce to a preselected vacuum pressure

adequate to evacuate air or gas from the produce interior through its skin surfaces;

coating food grade liquid material onto the exterior skin surfaces of the produce while continuing to subject the produce to the preselected vacuum pressure to thereby wet the skin surfaces with the liquid material; and



progressively releasing the vacuum pressure to return the pressure surrounding the produce to atmospheric conditions while further coating the liquid material onto the exterior skin surfaces of the produce without submersion and at a rate which permits the liquid material to be forced through the produce skin surfaces due to the increase in exterior pressure about it.

4,331,692

COCOA FRUITS AND PRODUCTS

Ulla Drevici, and Noe Drevici, both of 2150 Center Ave., Fort Lee, N.J. 07024

Division of Ser. No. 877,479, Feb. 13, 1979, Pat. No. 4,206,245, which is a continuation of Ser. No. 459,318, Apr. 9, 1974, abandoned, which is a division of Ser. No. 165,396, Jul. 23, 1971, Pat. No. 3,809,778. This application Dec. 14, 1979, Ser. No. 103,736

Int. Cl.³ A23L *3/34*

U.S. Cl. 426—310 **7 Claims**

1. An animal feed composition comprising an intimate mixture of comminuted Theobroma fruit pods and from 2 to 10%, by weight, based upon said comminuted fruit pods of an edible fatty material, said fruit pods having been prepared by treating unopened Theobroma fruits with a preservative agent for a period of time sufficient to neutralize any toxic substances on the surface of the fruit and to stabilize lignification of the outer layer (peeling) of the fruit, drying the fruits to a moisture content of less than 70%, opening the dried fruits, and removing and separating the cocoa beans therefrom.

4,331,693

METHOD FOR STORAGE OF HORTICULTURAL PRODUCTS IN FRESHNESS

Jerzy Wojciechowski, Kedzierzyn; Jerzy Haber, Cracow; Zygmunt Gozdziewicz, Kedzierzyn, and Edward Lange, Skierniewice, all of Poland, assignors to Polska Akademia Nauk, Instytut Katalizy i Fizykochemii Powierzchni, Cracow, Poland

Filed Sep. 8, 1980, Ser. No. 184,611

Claims priority, application Poland, Sep. 12, 1979, 218257

Int. Cl.³ A23B *7/14, 7/148;* B01J *23/56*

U.S. Cl. 426—419 **7 Claims**

1. A method for storing horticultural products in a fresh state by circulating the atmosphere surrounding said products and by removal of ethylene therefrom outside of the storage chambers, characterized in that ethylene is removed by catalytic combustion in the presence of a platinum catalyst which has been activated by impregnating it with a fatty acid at a temperature of 60°–80° C., slowly heating it in a nitrogen stream to a temperature of 400°–450° C. for a period of two hours, and then in an air stream at a temperature of 500°–550° C.

4,331,694

REMOVAL OF CAFFEINE BY SELECTIVE ADSORPTION USING ZEOLITE ADSORBENTS

Thomas P. J. Izod, Holliston, Mass., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 973,438, Dec. 26, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,629

Int. Cl.³ A23F *5/22, 3/38*

U.S. Cl. 426—422 **8 Claims**

1. Process for removing caffeine from aqueous solutions which comprises contacting in the liquid phase at a temperature of not more than 100° C. an aqueous solution containing at least 0.01 weight percent caffeine dissolved therein with a crystalline zeolitic molecular sieve having a SiO_2/Al_2O_3 molar ratio of from 4.5 to 35, the essential X-ray powder diffraction pattern of zeolite Y, and ion-exchange capacity of not greater than 0.070, a unit cell dimension, a_o, of from 24.20 to 24.45 Angstroms, a surface area of at least 350 $m^2/g.$, a sorptive capacity for water at 25° C. and a p/p_o value of 0.10 of less than 5.00 weight percent, and a Residual Butanol Test value of not more than 0.40 weight percent, whereby caffeine is adsorbed on said zeolite, and thereafter isolating the said zeolite from said aqueous solution.

4,331,695

PRODUCTION OF FATS AND OILS FROM VEGETABLE AND ANIMAL PRODUCTS

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 658,658, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 452,485, Mar. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 424,241, Dec. 12, 1973, abandoned. This application Feb. 16, 1977, Ser. No. 769,326

Claims priority, application Austria, Dec. 22, 1972, 10999/72

Int. Cl.³ A23L *1/20;* C09F *5/02;* C11B *1/10*

U.S. Cl. 426—430 **21 Claims**

1. Process for production of fat and oil glyceride from a vegetable or animal product wherein said product is separated into glyceride and a residue, comprising:

(a) contacting the product with a solvent having solvent power for the glyceride to dissolve the glyceride and leave said residue, at a temperature below the critical temperature of the solvent, and with the solvent in liquid phase,

(b) separating solvent containing extracted glyceride from the residue,

(c) precipitating glyceride from the solvent containing extracted glyceride obtained in step (b) by heating the solvent containing extracted glyceride to above the critical temperature of the solvent, without heat of vaporization being taken up, wherein the temperature for the extraction is 0°–100° C., and for the precipitation the temperature is 50°–200° C. and the pressure is constant.

4,331,696

EXTRA THIN-FLAKED R & G COFFEE WITH STRUCTURAL INTEGRITY AND INCREASED EXTRACTABILITY

Harry W. Bruce, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 147,027, May 7, 1980, abandoned, which is a continuation of Ser. No. 958,088, Nov. 6, 1978, abandoned. This application May 22, 1981, Ser. No. 266,269

Int. Cl.³ A23F 5/12

U.S. Cl. 426—595 **14 Claims**

1. A method of flaking roast and ground coffee to provide a thin flaked coffee product having improved structural integrity and enhanced extractability for a less acidic beverage, said method comprising the steps of:

(1) passing through a roll mill coarse roast and ground coffee having a coarse particle size distribution such that:

(a) from about 90% to 100% by weight is retained on a No. 30 U.S. Standard Screen,

(b) from about 51% to 89% by weight is retained on a No. 16 U.S. Standard Screen, and

(c) from about 20% to 50% by weight is retained on a No. 12 U.S. Standard Screen,

(2) operating said roll mill:

(a) at a static gap setting of less than about 0.1 mm.,

(b) a roll peripheral speed of from about 150 meters/min. to about 800 meters/min.,

(c) a roll temperature of below about 40° C., and

(d) at a pressure of about 100 kilonewtons/meter to about 400 kilonewtons/meter of nip, and

wherein the rolls of said roll mill have a roll diameter of at least about 15 cm, and

wherein the resultant thin flaked coffee comprises:

thin flakes of roast and ground coffee, wherein about 80% to about 98% by weight of said flakes have an average thickness of from about 0.1 mm. to about 0.175 mm.,

said improved roast and ground coffee product having a particle size distribution such that about 30% to about 90% by weight of said product passes through a No. 30 U.S. Standard sieve,

said product having a tamped bulk density of from about 0.35 g./cc. to about 0.50 g./cc., and

a moisture content of from about 2.5% to about 9.0% by weight.

4,331,697

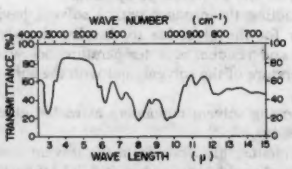
NOVEL HEPARIN DERIVATIVE, METHOD FOR PRODUCTION THEREOF, AND METHOD FOR RENDERING BIOMEDICAL MATERIALS ANTITHROMBOTIC BY USE OF THE NOVEL HEPARIN DERIVATIVE

Akira Kudo; Hiroo Inata, and Makoto Ogasawara, all of Hino, Japan, assignors to Teijin Limited, Oraka, Japan

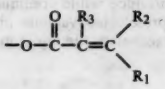
Filed Sep. 2, 1980, Ser. No. 183,377

Int. Cl.³ A01N 1/02

U.S. Cl. 427—2 **5 Claims**



1. A method for imparting antithrombotic activity to a biomedical material, which comprises treating that surface of the biomedical material which makes contact with the blood with actinic light in the presence of a heparin derivative in which at least 0.5% of the entire hydroxyl groups of heparin are in the form of an ester of the following formula



(I)

wherein R_1, R_2 and R_3 each represent a hydrogen atom or an alkyl group having 1 to 6 carbon atoms.

4,331,698

METHOD FOR MAKING A VERY PURE SILICON

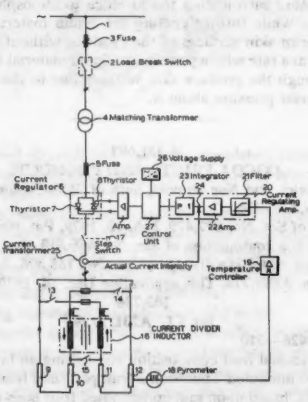
Gerhard Behensky, and Wilhelm Lux, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,657

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928456

Int. Cl.³ B05D 5/12

U.S. Cl. 427—50 **3 Claims**



1. A process for producing high purity silicon semiconductor materials and metals by thermal decomposition of a gaseous compound containing the silicon semiconductor material or metal passing over silicon carrier bodies heated by an external electrical power source, comprising the steps of:

arranging the silicon carrier bodies into groups coupled in parallel electrical connection across the power source during the start of the deposition process;

passing an equal amount of electrical current through each of the groups of the parallel connection, so as to heat the carrier bodies to deposition temperature;

regulating the current in each of the parallel carrier groups by means of a current-divider inductor having a winding connected to each group, so that the same current flows through each parallel connected group;

passing a gaseous compound containing the silicon material or metal over the heated carrier bodies to permit silicon deposition or metal deposition onto the surface of the carrier bodies; and

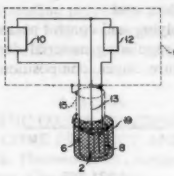
switching said groups of carrier bodies in parallel electrical connection to a series electrical connection, after the voltage across each carrier body reaches a predetermined reduced voltage after being heated, so that the current in each carrier body decreases and the current-divider inductor is switched out of the circuit.

4,331,699

METHOD FOR EVALUATING ELECTROLESS PLATING

Masayuki Suzuki, Yokohama; Yuichi Sato, Atsugi, and Ken-ichi Kanno, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 28, 1980, Ser. No. 125,567
Claims priority, application Japan, Mar. 7, 1979, 54-25670
Int. Cl.[3] C23C 3/02
U.S. Cl. 427—8 22 Claims



1. A method of evaluating electroless plating, comprising the steps of:

initiating an electroless plating reaction; and

determining the reaction resistance R_{ELP} of a test piece having a surface area S and disposed in an electroless plating bath thereby creating an electrical double layer at the interface of said test piece and said bath, said step of determining said reaction resistance comprising:

(i) instantaneously feeding a given charge q_R to the electrical double layer of the test piece, thereby changing the potential of the test piece to have a predetermined polarization potential η_R;

(ii) measuring, as a function of time, the variation of the polarization potential $\eta_R(t)$ of the test piece due to an electroless plating reacton, using a reference electrode disposed in the plating bath;

(iii) determining, on the basis of said polarization potential $\eta_R(t)$, an initial polarization potential $\eta_R(O)$ of the test piece upon completion of the charge supply (t=0); and

(iv) calculating the reaction resistance R_{ELP} based on the given charge q_R, initial polarization potential $\eta_R(0)$, surface area S and the slope of the log $\eta_R(t)$—t relation, said reaction resistance R_{ELP} being inversely proportional to the rate of electroless plating V_{ELP};

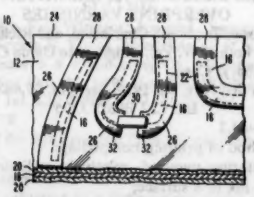
whereby electroless plating is evaluated by the reaction resistance R_{ELP} thus calculated.

4,331,700

METHOD OF MAKING A COMPOSITE SUBSTRATE

Robert L. Schelhorn, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 98,927, Nov. 30, 1979, Pat. No. 4,296,272. This application Apr. 28, 1981, Ser. No. 258,433
Int. Cl.[3] H05K 3/46
U.S. Cl. 427—8 4 Claims



1. A method of fabricating an improved thick film composite substrate comprising the steps of:

providing a composite substrate having a plurality of patterned conductive layers interleaved with a plurality of electrically insulative ceramic layers and having been fired to form a shrunken patterned conductive layer of refractory material on one major surface of said substrate;

measuring the degree of said shrinkage;

generating, based on the determined degree of shrinkage, a thick film mask of a patern which compensates for said shrinkage; and

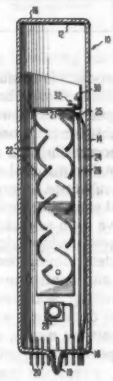
forming on said surface, by using said mask, a patterned conductive compensation layer which is generally like that of said shrunken patterned conductive layer and entirely covers and extends beyond said shrunken patterned conductive layer of refractory material by an amount about equal to the degree of shrinkage.

4,331,701

RUBIDIUM-CESIUM-ANTIMONY PHOTOCATHODE

Arthur F. McDonie, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 937,567, Aug. 28, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,296
Int. Cl.[3] B05D 1/34, 1/38, 3/04
U.S. Cl. 427—10 2 Claims



1. A method of forming a photosensitive cathode in an enclosure, comprising:

evacuating said enclosure;

condensing a film of material selected from the group consisting of manganese and antimony onto a substrate in said enclosure;

continuing the condensation of said film until the light transmission through said substrate is reduced to about 90–95% of the transmission prior to the condensing step;

introducing oxygen into said enclosure;

oxidizing said film of material;

depositing a layer of antimony onto said oxidized film;

continuing the deposition of antimony until the light transmission through the substrate is reduced to about 65 to 85% of the transmission prior to the deposition of antimony;

simultaneously evaporating rubidium and cesium from a source and releasing said materials into said enclosure to react with said layer of antimony;

heating said substrate first at a temperature of between 140° to 160° C. for about 10–20 minutes and then at a temperature between 180° to 195° C. for about 25–50 minutes;

slowly cooling said substrate at a rate of about 5°–10° C. per minute to a temperature of approximately 70°–80° C.; and

cooling freely said substrate to room temperature.

4,331,702
METHOD FOR REPRODUCIBLE MANUFACTURE OF METALLIC LAYERS

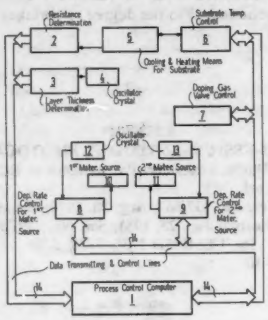
Konrad Hieber, and Norbert Mayer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,885

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004149

Int. Cl.³ C23C *13/02, 15/00*

U.S. Cl. 427—10 **6 Claims**



1. A method for reproducible manufacture of metallic layers for semiconductor and thin film technology with the aid of an operable material deposition system including an enclosed vacuum chamber, a substrate positioned in said chamber, heat-exchange means for controlling the temperature of said substrate, at least one metallic material source positioned in said chamber facing said substrate, energy means for supplying energy to said material source, a doping gas source connected via a controllable valve with said chamber, measuring means for determining thickness of a layer deposited on said substrate, measuring means for determining resistance of a layer deposited on said substrate and control means interconnected with and selectively controlling said heat-exchange means, said energy means and said doping gas source relative to a signal derived from said measuring means, comprising the steps of:

(a) continuously depositing and building a metallic layer on said substrate;

(b) cyclically and independently measuring the thickness, d, and the electrical resistance of said metallic layer and generating signals corresponding to such measured values;

(c) forming index values for, $\rho\infty$, $l\infty$, p, h and cyclically determining the specific electrical resistance, ρ, as a function of layer thickness, d, in accordance with the expression:

$$<\rho(d)> = \frac{d}{s}\int_{a}^{s}\frac{\rho[d(x)]}{d(x)}\,dx \qquad (1)$$

with $d(x)=d+h \sin 2\pi/s \times$ and

$$\rho[d(x)] = \rho_\infty\left\{1 - \frac{3l_\infty}{2d(x)}(1-p)\int_1^\infty\left(\frac{1}{t^3}-\frac{1}{t^5}\right)\frac{1-e^{\frac{-d(x)}{l_\infty}t}}{1-pe^{\frac{-d(x)}{l_\infty}t}}\,dt\right\} \qquad (2)$$

wherein $\rho\infty$ is the specific electrical resistance of an "infinite" thick layer with an internal structure identical to the said metallic layer; $l\infty$ is the mean free path length of an "infinite" thick layer with an internal structure identical to the said metallic layer; p is a reflection parameter equal to the proportion of electrons reflected without resistance loss at the surface of said layer; h is the mean roughness amplitude of the surface of said layer; t is an integration variable and s is the wavelength of periodic thickness fluctuations of said layer;

(d) cyclically determining the actual values of $\rho\infty$, $l\infty$, p and h relative to said measured values and comparing the same to said respective index values so as to derive respective control parameters; and

(e) selectively applying said control parameters to said control means for regulating material deposition rate, substrate temperature, layer composition and doping gas pressure.

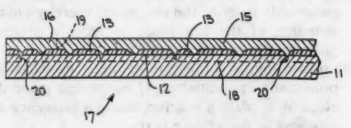
4,331,703
METHOD OF FORMING SOLAR CELL HAVING CONTACTS AND ANTIREFLECTIVE COATING

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 24,784, Mar. 28, 1979, Pat. No. 4,240,842, which is a continuation-in-part of Ser. No. 3,945, Jan. 16, 1979, Pat. No. 4,297,391. This application Dec. 13, 1979, Ser. No. 103,292

Int. Cl.³ H01L *31/18*

U.S. Cl. 427—37 **12 Claims**



1. A method of applying an electrically conductive contact to the light-receiving surface of a photovoltaic cell formed from a host material and having an antireflective coating which is completely oxidized and, without further treatment, will reduce reflection of light from said light-receiving surface of said cell by providing an index of refraction intermediate that of air and said host material, overlying said light-receiving surface, comprising separately forming particles of metallic material at a temperature in excess of the alloying temperature of said metallic material and said host material, and thereafter spraying said particles toward said surface at a distance such that said particles will contact said antireflective coating, permeate it, and come into electrical contact with said surface.

4,331,704
ACRYLATED SILICONES AS RADIATION-CURABLE OVERPRINT VARNISHES

Stuart L. Watson, Jr., South Charleston, and Richard G. Carter, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 26, 1979, Ser. No. 97,443

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **9 Claims**

1. In a method of printing comprising:

(a) administering uncured, relatively radiation uncurable, oil-based ink to a surface;

(b) immediately covering the uncured inked surface with a radiation-curable coating;

(c) radiation curing the radiation-curable coating; and

(d) subsequently allowing the ink to cure; the improvement comprising covering the inked surface with a radiation-curable coating formulated with an acrylated silicone.

4,331,705

CURING OF POLYAMIC ACIDS OR SALTS THEREOF BY ULTRAVIOLET EXPOSURE

Rama P. Samudrala, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 11, 1980, Ser. No. 120,710
Int. Cl.³ B05D 3/06
U.S. Cl. 427—54.1 7 Claims

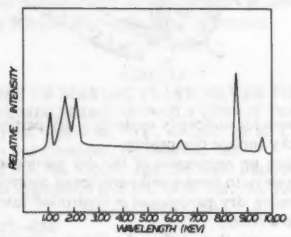
1. A process for curing a film of a polyamic acid or salt thereof to a corresponding polyimide comprising exposing at least one surface of said film to ultraviolet radiation at a sufficient intensity for a sufficient time to cure said film.

4,331,706

COMPOSITE ZINC OXIDE COATING ON AN INERT PIGMENT CORE PRODUCT AND PROCESS

Robert H. Kindrick, Flossmoor, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 859,349, Dec. 12, 1977, Pat. No. 4,207,377, which is a continuation-in-part of Ser. No. 749,124, Dec. 9, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 110,573
Int. Cl.³ B05D 5/12; B32B 9/04, 15/04
U.S. Cl. 427—74 4 Claims



1. A method of producing a composite pigment having a specific surface in excess of about 10 m^2/gram which comprises dissolving metallic zinc in an aqueous ammonia-ammonium carbonate medium to form a solution, dispersing an inert inorganic pigmentary core material in said aqueous complex zinc solution, precipitating a basic zinc carbonate deposit on said dispersed pigment by heating at below atmospheric pressure, calcining the precipitated zinc compounds on said inert pigmentary core at a Temperature not to exceed about 900° C. and for a time schedule sufficient to convert the precipitated basic zinc compounds to zinc oxide while avoiding the formation of a combined oxide of zinc and said pigmentary core material.

4,331,707

PROCESS FOR THIN FILM DEPOSITION OF CADMIUM SULFIDE

H. Paul Muruska, East Windsor; Joseph L. Sansregret, Scotch Plains, and Archie R. Young, Montclair, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1980, Ser. No. 197,082
Int. Cl.³ B05D 1/02, 3/02, 3/04
U.S. Cl. 427—74 22 Claims

1. A method for constructing films of cadmium sulfide comprising:

providing a substrate;

heating said substrate to a temperature ranging from about 450° C. to about 540° C.;

providing a solution comprising at least one cadmium salt in water, methanol or a mixture thereof;

providing an indium salt in said solution to improve conductivity of the final film;

atomizing said solution;

contacting said heated substrate with said atomized solution to form a layer of cadmium oxide;

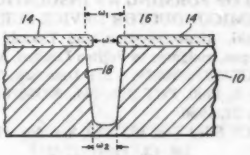
annealing said oxide layer at a temperature ranging from about 350° C. to about 500° C. in a gaseous sulfur-containing compound capable of undergoing a sulfur exchange with said oxide layer to form cadmium sulfide.

4,331,708

METHOD OF FABRICATING NARROW DEEP GROOVES IN SILICON

William R. Hunter, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1980, Ser. No. 203,842
Int. Cl.³ H01L 21/76
U.S. Cl. 427—93 13 Claims



1. A method of forming insulating barriers in a semiconductor substrate comprising the steps of:

forming a pattern of submicron-width oxidation masking elements on a surface of said substrate;

forming a layer of insulating material resistant to an etchant on the exposed areas of said substrate surface;

removing said oxidation masking elements to expose said substrate in a pattern of submicron width openings;

anisotropically etching said substrate with said etchant to form grooves therein conforming to said pattern of openings and having a depth substantially greater than their width; and

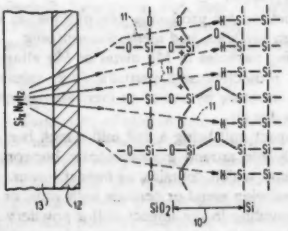
forming an insulating material to substantially fill said grooves.

4,331,709

PROCESS OF REDUCING DENSITY OF FAST SURFACE STATES IN MOS DEVICES

Lothar Risch, Ottobrunn; Erich Pammer, Taufkirchen, and Karlheinz Friedrich, Neuried, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,180
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932569
Int. Cl.³ H01L 21/324, 21/318
U.S. Cl. 427—94 3 Claims



1. A process for reducing the density of fast surface states in MOS devices, such as surface-charge-coupled devices (SCCDs), comprising:

providing a MOS device having a Si-SiO_2 interface region with the SiO_2 defining a free surface of such device and having electrodes therein;

depositing a relatively thin amorphous layer comprised of silicon, hydrogen and nitrogen from a reaction gas comprised of silanium and a nitrogen-containing gas at a given deposition temperature onto said SiO_2 free surface of the device; and

annealing the resultant structure in a non-oxidizing atmosphere for a relatively brief period of time at a temperature in excess of said given deposition temperature and below about 500° C. whereby free valences at the Si-SiO_2 interface region are saturated with hydrogen and the density of fast surface states is reduced.

4,331,710

METHOD OF FORMING AN INSULATION FILM ON SEMICONDUCTOR DEVICE SURFACE

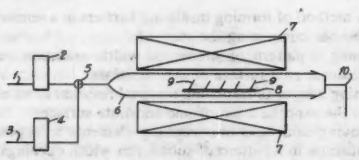
Takao Nozaki, Aizuwakamatsu, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP79/00039, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO80/01739, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 19, 1979, Ser. No. 212,083

Int. Cl.³ H01L *21/318*

U.S. Cl. 427—94 **1 Claim**



1. A method of forming a silicon nitride film on the surface of a silicon substrate, said method comprising the steps of

forming a silicon nitride film on the surface of a substrate by direct thermal nitridation in an ambient gas of nitrogen; and

changing the ambient gas to a reaction gas of one of ammonia and a mixture of an inert gas and ammonia to further the direct thermal nitridation to densify the silicon nitride film.

4,331,711

PRODUCTION OF SALT-COATED MAGNESIUM PARTICLES

Edward J. Skach, Jr., Freeport, and Marshall P. Neipert, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1978, Ser. No. 936,978

Int. Cl.³ B05D *1/12*

U.S. Cl. 427—180 **11 Claims**

1. A method for producing non-pyrophoric salt-encrusted magnesium particles, said method comprising

providing particles of Mg metal or Mg alloy in an impact mill, protecting said particles from substantial contact with moisture by use of an inert atmosphere or substantially dry air,

said impact mill being a ball mill which is a compartment revolvable around a substantially horizontally-disposed axis and which contains, as impact means, a plurality of free-moving metal or ceramic balls rods, or cylinders,

also providing in the impact mill a powdery salt of −100 mesh particle size in an amount at least sufficient to completely coat the Mg or Mg alloy particles, rotating the compartment at a speed which causes the impact means to move with the rotating compartment until the impact means fall back down because of gravity, rotating for a time sufficient to substantially completely impact the Mg or Mg alloy particles with a coating of salt, and

removing the so-formed salt-encrusted Mg or Mg alloy particles from the impact mill.

4,331,712

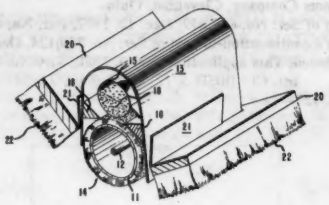
PROCESS FOR APPLYING DRY PARTICULATE MATERIAL TO A TACKY SURFACE

Abraham B. Cohen, Springfield, and Michael J. Krawacki, Union, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 693,948, Jun. 8, 1976, abandoned, which is a continuation of Ser. No. 524,204, Nov. 15, 1974, abandoned. This application Nov. 18, 1977, Ser. No. 852,703

Int. Cl.³ B05D *1/36*

U.S. Cl. 427—202 **5 Claims**



1. A process for uniformly applying a dry particulate material to a tacky surface comprising:

(a) breaking up aggregates of the dry particulate material using a sieve to form small particles of controlled size;

(b) dispensing dry particles at a controlled rate from said sieve to a roller;

(c) concurrently therewith and without permitting the dry particles to reaggregate, contacting said tacky surface with said roller to transfer said dry particles from said roller at said controlled rate uniformly onto said tacky surface without imparting any substantial shear force to said surface area; and

(d) embedding the uniformly transferred, unaggregated dry particles in the tacky surface using a shear force.

4,331,713

PROCESS AND APPARATUS FOR THE CONTINUOUS COATING OF A SHEET ARTICLE, PARTICULARLY A WEB OF PAPER OR PAPERBOARD

Pierre Girard, Saint-Ismier, and Michel Richard, Le Touvet, both of France, assignors to Centre Technique de l'Industrie des Papiers, Cartons et Celluloses, Grenoble, France

Filed Mar. 12, 1980, Ser. No. 129,656

Claims priority, application France, Mar. 14, 1979, 79 06506; Feb. 15, 1980, 80 03392

Int. Cl.³ B05D *1/42*

U.S. Cl. 427—209 **6 Claims**

1. A process for continuously coating a sheet article comprising:

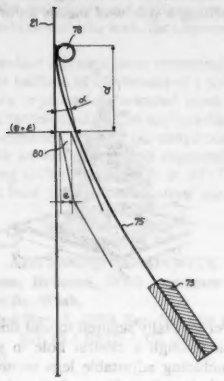
(a) continuously moving said sheet article in a predetermined direction;

(b) placing a coating composition into contact with at least one surface of said sheet article;

(c) exerting pressure on said at least one surface to ensure spreading of said coating composition; and

(d) conducting said sheet article between at least two elements, at least one of said elements comprising a spreading blade subjected to a force applied substantially at a zone of contact between said blade and said sheet article, said blade being spaced apart from said sheet article other than at said contact zone, said force being different from the flexion force of said blade, wherein said coating composi-

tion is placed into contact with said sheet article by directing a continuous stream of said coating composition under



pressure out of an injector directed towards said zone of contact whereby said stream directly contacts said sheet article substantially at the zone of contact.

4,331,714

PROCESS OF MAKING FLAKE SILVER POWDERS WITH CHEMISORBED MONOLAYER OF DISPERSANT

Leo W. Tyran, Lewiston, N.Y., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 53,197, Jun. 29, 1979, Pat. No. 4,273,583. This application Dec. 21, 1979, Ser. No. 106,250

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—216 **6 Claims**

1. A process for preparing flake silver powder comprising the steps of

(a) preparing an admixture of precipitated silver powder, liquid milling medium, and at least 0.2% by weight hydrophobic unsaturated carboxylic acid,

(b) bead-milling the admixture for a time sufficient to form a monolayer of the carboxylic acid on at least ½ of the particle surfaces, and

(c) separating the liquid milling medium and beads from the resultant flake silver particles.

4,331,715

PROCESS FOR IMPROVING THE CORROSION RESISTANCE OF CONVERSION COATED PARTS

Stephen M. Wolpert, Detroit, Mich., assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Jan. 2, 1981, Ser. No. 222,185

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—240 **12 Claims**

1. A process for improving corrosion resistance of conversion coated parts such as fasteners and the like comprising:

(A) first dipping said conversion coated parts into a bath of an aqueous based coating composition comprising:

(1) from about 4% to about 40% of a water solubilized epoxy adduct of an epoxy compound and an amino-substituted aromatic carboxylic acid;

(2) a curing agent in an amount effective to cure said epoxy adduct;

(3) from about 0.02% to about 3% of a flow control agent selected from the group consisting of silicones, fluorocarbons, nonionic wetting agents, anionic wetting agents, ethoxylated alkylated phenols and mixtures thereof; and

(4) balance water;

(B) spinning said parts to remove excess coating composition;

(C) again carrying out step (A);

(D) again carrying out step (B);

(E) baking said parts to provide a cured coating composition thereon; and

(F) applying an oil to said cured coating composition.

4,331,716

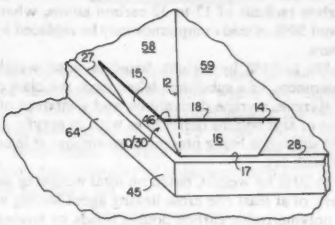
SPRAY SHIELDS AND SPRAYING METHODS

Bill Stark, 318 E. Foothill Blvd., Arcadia, Calif. 91006

Continuation-in-part of Ser. No. 927,179, Jul. 21, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,432

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—282 **40 Claims**



1. A spray shield for use at both projecting corners and recessed corners, comprising in combination:

an angled sheet of rigid material having integral first and second legs;

said sheet having a first free edge along said first and second legs for hugging a projecting corner;

said sheet having a second free edge along said first and second legs and opposite said first free edge for congruity with a recessed corner;

said sheet being slanted throughout at least one of said legs to extend to an oblique angle to vicinal surfaces of hugged projecting and congruent recessed corners; and

said sheet extending parallel to a surface of said projecting corner throughout the other of said legs.

4,331,717

AQUEOUS DISPERSIONS OR SOLUTIONS OF OLIGOMERIC OR POLYMERIC PLASTICS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Wolfgang Wenzel, Bergisch Gladbach, and Walter Meckel, Neuss, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,557

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827156

Int. Cl.³ B05D *3/02*; C08L *71/04*

U.S. Cl. 427—389.7 **9 Claims**

1. Aqueous dispersions of oligomers or polymers, polycondensates or polyaddition products containing from about 2 to 200 milliequivalents per 100 g of solids of incorporated ammonium groups obtained by the neutralization of incorporated tertiary nitrogen atoms with organic acids, characterized in that the organic acid with the exception of carbonic acid on which the ammonium groups are based is an acid which loses its acid character at temperatures in the range from about 20° to 200° C. in the absence of water without releasing corrosive decomposition products.

4,331,718
PROCESS FOR THE PRODUCTION OF ADHESIVE-REPELLENT COATINGS

Peter Gleichechagen, and Günter Klaass, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 84,703, Oct. 15, 1979, abandoned. This application May 12, 1981, Ser. No. 262,996

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845541

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—391 31 Claims

1. A process for the production of adhesive repellent coatings comprising producing a copolymer by radical emulsion-polymerization under alkaline conditions in an aqueous medium of monomers comprising

(a) 5% to 85% by weight, based on total weight of said monomers, of at least one compound of maleic monoamide or maleic monoester, said compound having a hydrocarbon radicals of 12 to 32 carbon atoms, wherein up to about 50% of said compounds may be replaced by fumaric esters,

(b) 15% to 95% by weight, based on total weight of said monomers, of a substance taken from the class consisting of styrene, styrene derivatives, and a mixture of said styrene or said styrene derivatives with an acrylic alkyl ester, said substance being present in an amount at least equimolar with (a),

(c) 0 to 20% by weight, based on total weight of said monomers, of at least one cross linking agent having a plurality of polymerizable carbon double bonds, or having reactive functional groups,

(d) 0 to 20% by weight, based on total weight of said monomers, of polar materials having at least one carboxyl group, whereby an aqueous emulsion having a solids content is produced, applying said emulsion to a substrate to form a coating, and drying said coating at a temperature of at least 100° C.

4,331,719
LOW TEMPERATURE CURING THERMOSETTING COATINGS FOR SOLVENT-SENSITIVE MOLDINGS

Frank J. Ragas, Willow Springs; Ralph L. Minnis, Des Plaines; Edward J. Murphy, Mt. Prospect, all of Ill., and Steve J. Vargo, Brighton, Mich., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 23, 1980, Ser. No. 219,843

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—393.5 11 Claims

1. A low temperature curing solution coating composition adapted to be applied to solvent-sensitive thermoplastic moldings and cured at an elevated temperature without damaging said moldings comprising, a solvent medium consisting essentially of alcoholic solvents, said solvent medium having dissolved therein a self-curing solution copolymer of monoethylenically unsaturated monomers comprising nonreactive monomer and from 5% to 30% of the weight of the copolymer of an ether of an N-methylol functional monomer, said solution of copolymer in alcoholic solvent medium being catalyzed with from 0.5% to 2.0%, based on the weight of the copolymer, of sulfuric acid.

4,331,720
CHRISTMAS TREE

James Vin Dick, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May 30, 1980, Ser. No. 154,903

Int. Cl.³ A47G *33/06*

U.S. Cl. 428—9 1 Claim

1. A collapsible artificial Christmas tree comprising a base having a collapsible center rod mounted removably thereon in combination with a spiral coil encompassing said rod and secured to the rod through a hole in the rod at an upper end of said rod including artificial pine covering mounted on said coil in combination with means for storing said tree in collapsed condition, comprising a side wall means secured to said base

periphery, a cover pivotally secured to said side wall, said rod being extendable through a central hole in said cover said means further including adjustable legs secured to said side wall, said coil including spaced irregular portions to provide a realistic contour.

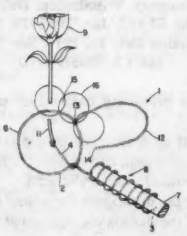
4,331,721
DECORATIVE HOLDER

Anne L. Ayers, P.O. Box 233, Daniels, W. Va. 25832

Filed Feb. 13, 1980, Ser. No. 121,161

Int. Cl.³ A01G *5/04*

U.S. Cl. 428—23 9 Claims



1. A decorative holder for an implement or similar article comprising supporting means for supporting said implement and a base portion including a closed frame element comprising a single strand having disposed thereupon a first tier of loops formed from a continuous single strand of pliant and fixable material, each of said loops having a cross-over portion crossing over and touching said frame element and a cross-under portion crossing under and touching said frame element so that the frame element axially intersects each of the loops, said supporting means comprising an extension of said closed frame element formed into a substantially helical coil.

4,331,722
SEALING LEAKS BY POLYMERIZATION OF VOLATILIZED ORGANOSILANE MONOMERS

Joseph J. Packo, Austin, Tex., and Donald L. Bailey, Traverse City, Mich., assignors to Packo Industries, Inc., Austin, Tex.

Filed Dec. 11, 1980, Ser. No. 217,412

Int. Cl.³ B32B *35/00*; F16L *55/10*

U.S. Cl. 428—35 22 Claims

1. A method of forming a seal at the situs of a leak in a vessel, conduit or the like, adapted for containing or transmitting a gaseous fluid therein, which method comprises introducing under pressure a sealant of a gaseous or ambient temperature volatilizable, polymerizable monomer or mixture of monomers into the interior of said vessel or conduit wherein, when the

gaseous or volatilized monomer or monomer mixture escapes through a leak in the vessel or conduit, it reacts with the soil or moisture present at the ambient exterior locus of the vessel or conduit where the leak exists and polymerizes to form a solid product in situ which seals the leak, the improvement comprising

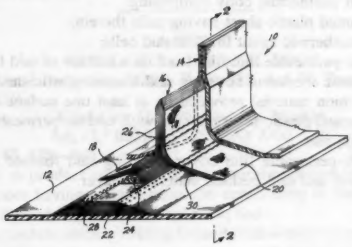
using as the sealant a composition consisting essentially of a monomer or mixture of monomers of a polymerizable and hydrolyzable organosilane selected from the group consisting of: a mercaptosilane, an acyloxysilane, an alkoxysilane in combination with acetic anhydride, and an alkoxysilane with an amine and said organosilane or mixture thereof being sufficiently volatile at 20°–180° F. to give a vapor of at least 100 ppm in a carrier gas.

4,331,723

ADVANCED COMPOSITE

Robert A. Hamm, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 5, 1980, Ser. No. 204,128
Int. Cl.³ B32B *5/02, 5/28*
U.S. Cl. 428—61 **8 Claims**



1. A composite structural joint comprising: an arcuate wedge shaped insert adherend to and extending along the inside length of a composite structural joint, a laminate of high modulus reinforced resin layers making up each of three sides of the wedge, a core of reinforced resin inside the layers of lamiantes, and a stitching of reinforcing threads joining the lamiantes together along the length and adjacent the core to make up the unified insert for the joint.

4,331,724

FIBRILLATED POLYESTER TEXTILE MATERIALS

Tien-Kuei Su, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 907,920, May 22, 1978, abandoned. This application Jan. 8, 1979, Ser. No. 1,993
Int. Cl.³ B32B *27/02*
U.S. Cl. 428—91 **7 Claims**

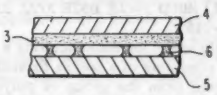
1. A textile material having a body portion comprising a plurality of continuous filaments, said filaments consisting essentially of polyester, wherein said filaments have a curvature and are arranged so as to have convex side portions and concave side portions, said convex side portions containing a plurality of fibrils integrally joined to said continuous filaments pointing away from the body portion of said materials, said fibrils being of no more than about half the thickness of the filament from which they are formed, said fibrils further consisting essentially of polyester.

4,331,725

WRAPPING MATERIALS

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1981, Ser. No. 274,569
Claims priority, application Japan, Jun. 17, 1980, 55-81572
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—138 **12 Claims**



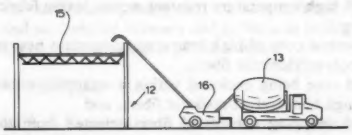
1. A wrapping material comprising at least (1) two uniaxially-stretched thermoplastic resin films which are disposed in such a manner that the stretching directions of the two films intersect each other at an angle of 45° to 90° and (2) an adhesive layer sandwiched between the two films wherein the adhesive layer has a plurality of holes perforating the adhesive layer in the form of a net.

4,331,726

ROOFING COMPOSITION AND STRUCTURE

Patrick J. Cleary, 9107 S. Bell Ave., Chicago, Ill. 60620

Continuation-in-part of Ser. No. 48,091, Jun. 13, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,281
Int. Cl.³ B32B *5/18*
U.S. Cl. 428—143 **15 Claims**



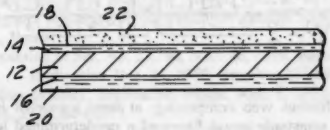
1. A roofing composition consisting essentially of a mixture of closed cell chopped foamed plastics material, fly ash and an aqueous acrylic copolymer emulsion binder.

4,331,727

ADHESIVE TRANSFER DEVICE

Stanley Maas, 366 Main St., Port Washington, N.Y. 11050

Continuation-in-part of Ser. No. 614,172, Sep. 17, 1975, abandoned. This application Oct. 7, 1977, Ser. No. 840,486
Int. Cl.³ B29D *7/26*; B32B *7/02, 7/06*; C09J *7/02*
U.S. Cl. 428—213 **9 Claims**



1. An article of manufacture comprising a substrate carrier sheet having a pair of opposed faces; a layer of release coating material formed on each of said faces; one of said layers of

release coating having a greater release value than the other and a releasable adhesive coating on said one of said layers of release coating; said one layer of release coating being thicker than the other layer of release coating.

4,331,728

LAMINATE MADE OF A CELLULOSE ACETATE LAYER AND AN ELASTOMERIC MATERIAL LAYER

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 950,515, Oct. 11, 1978, Pat. No. 4,203,439, which is a continuation-in-part of Ser. No. 743,974, Nov. 22, 1976, abandoned. This application Dec. 10, 1979, Ser. No. 101,870

Int. Cl.³ B01D *39/18;* B32B *5/22, 23/14, 23/20*

U.S. Cl. 428—215 2 Claims

1. A laminate useful for manufacturing a dispensing device, said laminate consisting of a lamina formed of an elastomeric member selected from the group of polymers consisting of rubber, polyisoprene, polyisobutylene, polybutadiene, ethylene-propylene copolymer, and butylene-vinyl acetate copolymer, laminated to a lamina formed of a cellulose polymeric member selected from the group consisting of cellulose acetate, cellulose diacetate and cellulose triacetate, which cellulosic polymer contains from 0.01% to 40% of a member selected from the group consisting of a polyhydric alcohol, a polyalkylene glycol, a poly(α-W-alkylenediol) and a polyester of an alkylene glycol.

4,331,729

HEAT RESISTANT AND PROTECTIVE FABRIC AND YARN FOR MAKING THE SAME

John W. Weber, Norristown, Pa., assignor to Norfab Corporation, Norristown, Pa.

Filed Dec. 1, 1980, Ser. No. 211,816

Int. Cl.³ B32B *7/00;* D03D *15/00*

U.S. Cl. 428—252 9 Claims

1. A high temperature resistant woven textile fabric of yarn having

a central core of high temperature resistant heat stabilized polyacrylonitrile fibers,

said core being enclosed within a wrapping consisting of high temperature resistant fibers, and

said wrapping consists of fibers selected from the group consisting of aramid fibers, polybenzimidazole fibers and phenolic fibers.

4,331,730

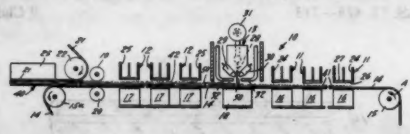
FIBROUS WEB STRUCTURE

Wayne P. Sorenson, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 58,902, Jul. 19, 1979, abandoned. This application May 4, 1981, Ser. No. 260,124

Int. Cl.³ B32B *7/00, 21/08, 21/02*

U.S. Cl. 428—286 1 Claim



1. A fibrous web comprising: at least a pair of layers of dry-laid nonstaple wood fibers of a predetermined length of about ¼ inch; and an intermediate layer consisting of randomly laid, overlapping melt-blown filamentary polymer fibers from about 5 inches to about 15 inches in length, said polymer fibers bonding said layers together.

4,331,731

EXOTHERMIC BODY

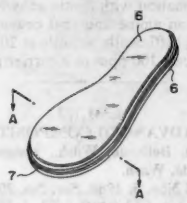
Takashi Seike, Yokohama, and Takehiko Kobayashi, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,623

Claims priority, application Japan, Aug. 1, 1980, 55-106146

Int. Cl.³ B32B *3/26;* A43B *7/02, 3/10*

U.S. Cl. 428—305.5 13 Claims



1. An exothermic body comprising:

a foamed plastic sheet having cells therein;

an exothermic agent filled in said cells;

an air-permeable thin film fixed on a surface of said foamed plastic sheet and covering said foamed plastic sheet;

a cushion material provided on at least one surface of said foamed plastic sheet covered with said air-permeable thin film; and

an air-permeable film cover covering said foamed plastic sheet and said cushion material in layer.

4,331,732

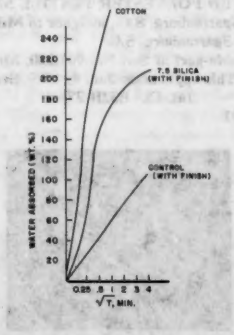
ACRYLIC FIBERS HAVING IMPROVED MOISTURE TRANSPORT PROPERTIES

George Palethorpe, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed May 24, 1978, Ser. No. 909,231

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—372 4 Claims



1. A fiber having improved moisture transport characteristics, said fiber being made of at least 85 weight percent acrylonitrile and up to 15 weight percent of another mono-olefinic monomer copolymerized with said acrylonitrile, said fiber containing 2 to 10 weight percent of silica having an average particle size of 1 to 4 microns, said silica being dispersed through the fiber.

4,331,733

FLAME-RETARDANT POLYOLEFIN COMPOSITIONS, THEIR METHOD OF PREPARATION AND INSULATED ELECTRICAL CONDUCTORS MANUFACTURED THEREWITH

Edwin R. Evans, Clifton Park, and Jerry D. Florence, Slingerlands, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,915
Int. Cl.[3] B32B *15/08*
U.S. Cl. 428—379 44 Claims

1. A curable polyolefin composition blend comprising an alpha-substituted polyolefin, about 1 to about 30 percent of a silarylenesiloxane-polydiorganosiloxane block copolymer and from zero to about 150 percent of a filler based on the weight of the polyolefin.

33. An insulated electrical conductor comprising a metal electrical conductor coated with a cross-linked cured polymeric composition blend comprising 100 parts of an alpha-substituted polyolefin composition and from about 2 to about 30 parts of a silarylenesiloxane-polydiorganosiloxane block copolymer and from 0 to about 150 parts of a filler.

4,331,734

SIMULATED VOLCANIC ROCK

William J. Stegmeier, 2525 E. Prince Rd., Apt. 72, Tucson, Ariz. 85716

Filed Oct. 31, 1980, Ser. No. 202,818
Int. Cl.[3] B32B *13/02;* B05D *7/00, 3/10*
U.S. Cl. 428—403 19 Claims

13. A product which simulates natural rock comprising:

a core having a shape generally conforming to the contour desired for said simulated rock; and

a concrete surface coating formed from a mixture of hydraulic cement and an aggregate, a substantial portion of which is provided by polymer particles having a significantly lower density than silica.

4,331,735

ONE COMPONENT IN-MOLD COATING

Henry Shanoski, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 163,444, Jun. 26, 1980, abandoned. This application May 20, 1981, Ser. No. 262,981
Int. Cl.[3] B32B *9/04, 27/40, 5/16*
U.S. Cl. 428—423.7 12 Claims

1. The method which comprises in-mold coating a molded thermoset polyester resin or thermoset vinyl ester resin glass fiber composition containing from about 10 to 75% by weight of glass fibers with a one component thermosetting in-mold coating composition under pressure, at a temperature and for a period of time sufficient to cure said in-mold coating composition to form an adherent thermoset coating on said molded thermoset resin glass fiber composition, said in-mold coating composition comprising

(a) a liquid crosslinkable composition having an average molecular weight of up to about 5,000, having a plurality of polymerizable ethylenic double bonds, being essentially free of active hydrogen atoms or being essentially free of isocyanate groups,

(b) a material selected from the group consisting of (I) a polyisocyanate and (II) the reaction product of an excess of equivalents of a polyisocyanate and an ethylenically unsaturated compound having —NH_2, —NH— and/or —OH groups, said reaction product being free of active hydrogen atoms and

(c) an organic free radical peroxide initiator in an amount sufficient to effect curing of said in-mold coating composition, said (b) being used in an amount sufficient to secure the adhesion of said coating composition to said molded thermoset resin glass fiber composition.

7. The product produced by the method of claim 1.

4,331,736

PROCESS UTILIZING RELEASE AGENT

Wolfgang Schäfer, Aachen-Orsbach; Helmer Rüdisch; Reinhold Fuchs, both of Aachen, and Günther Esser, Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Paris, France

Continuation-in-part of Ser. No. 96,671, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 965,079, Nov. 30, 1978, abandoned, which is a continuation of Ser. No. 884,272, Mar. 7, 1978, abandoned. This application Feb. 6, 1981, Ser. No. 232,129
Claims priority, application France, Mar. 8, 1977, 77 06758
Int. Cl.[3] B32B *27/40, 17/06*
U.S. Cl. 428—425.6 21 Claims

1. In a process wherein separation of two adhering surfaces is facilitated by application of a release agent to at least one of the surfaces, the improvement comprising applying to at least one of said surfaces an aqueous solution of a release agent which is a sulfosuccinate salt of an addition product of an organic substituted lower alkylene oxide with an organic acid, alcohol or amide.

2. In a process for forming a plastic article wherein a liquid composition from which said article is formed is applied to a glass, metal or plastic surface and congealed into solid form while on said surface, and wherein a release agent is applied to said surface to reduce the tendency of said article to adhere to said surface, the improvement comprising applying to said surface a release agent of the formula

$$R_1—X(C_2H_4O)_n—R_2$$

wherein: R_1 represents an alkyl group having about 8 to about 18 carbon atoms or an alkaryl group having about 6 to about 12 carbon atoms in the side chain; X represents O—, CO—O—, or CO-NH, n represents an integer within the range of 1 to about 100; and R_2 represents CO-CH(SO_3M)—CH_2COOM, or CO—C_6H_4—COOM in which event n is at least 25; and wherein M represents an alkali metal.

17. An article comprising two surfaces adhered to each other, and sandwiched between said surfaces to facilitate separation thereof a release agent of the formula

$$R_1—X(C_2H_4O)_n—R_2$$

wherein: R_1—X represents a fatty acid, fatty acid amide or fatty acid alcohol group; or

R_1 represents an alkaryl group having about 6 to about 12 carbon atoms in the side chain and X represents O-, CO—O, or CO—NH;

n represents an integer within the range of 1 to about 100; and

R_2 represents PO_3M_2, CO—CH(SO_3M)—CH_2COOM, or CO—C_6H_4—COOM; provided that when R_2 is CO—C_6H_4—COOM, then n is at least 25; and

wherein M represents an alkali metal; one of the surfaces being glass.

4,331,737

OXYNITRIDE FILM AND ITS MANUFACTURING METHOD

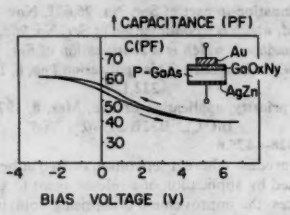
Jun-ichi Nishizawa, and Ikuo Shiota, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 23,766, Mar. 26, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,442
Claims priority, application Japan, Apr. 1, 1978, 53-38580; Jul. 14, 1978, 53-86573
Int. Cl.[3] B32B *15/04;* H01L *3/00*
U.S. Cl. 428—457 20 Claims

1. A Group III–V semiconductor substrate wherein the semiconductor is formed with at least one element of the Group III elements and at least one element of the Group V

elements in the periodic table, said substrate having a main surface;

a film formed on said substate and substantially formed of oxynitride of at least one substance selected from the group consisting of gallium, aluminum and their mixture,



said oxynitride having a finite O/N ratio by atomic fraction greater than 0.15.

14. A combination according to claim 1, further comprising a conductive layer formed at least locally on that side of said film located opposite to the side contacting the main surface of said substrate.

4,331,738

BLEND OF A CARBOXYLATED COPOLYMER LATEX AND OF AN ACRYLATE COPOLYMER LATEX FOR COATING RUBBER AND PRODUCT

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 4, 1980, Ser. No. 212,788
Int. Cl.³ B32B *25/08, 25/12*
U.S. Cl. 428—494 8 Claims

1. The method which comprises coating a hot, sticky rubber compound with a heat sensitized aqueous polymer composition comprising a blend of two latices, drying said coated rubber compound until at least 80% of the water has evaporated to form a gelled, non-tacky, water resistant and adherent polymeric coating from said composition on said rubber compound, cooling said coated rubber compound with water and drying the same to a temperature sufficiently low to prevent scorch of said rubber compound and stacking said coated rubber compound to provide layers of said rubber compound which do not stick together, (A) the polymer of one of said latices of said composition comprising a carboxylated copolymer of (1) at least 45% by weight of a monomer selected from the group consisting of styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methyl methacrylate and ethyl methacrylate and mixtures thereof, (2) a copolymerizable monomer selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, sorbic acid and crotonic acid and mixtures thereof in an amount of up to 10% by weight and (3) the balance, in an amount sufficient to provide some flexibility to and for vulcanization of said copolymer, a copolymerizable monomer selected from the group consisting of butadiene-1,3, isoprene, 2,3-dimethyl-butadiene-1,3 and piperylene and mixtures thereof, said copolymer of (A) having a glass transition temperature of not less than about −30° C.; and (B) the polymer of the other of said latices of said composition consisting essentially of a copolymer of (1) from about 50 to 70% by weight of at least one acrylate selected from the group consisting of methyl acrylate and ethyl acrylate, (2) from about 25 to 40% by weight of at least one alkacrylate selected from the group consisting of methyl methacrylate, ethyl methacrylate and methyl ethacrylate and (3) from about 3 to 7% by weight of acrylamide, said copolymer of (B) having a glass transition temperature of not less than about +30° C., the parts by weight ratio of the copolymer of (A) to the copolymer of (B) being from about 50:50 to 85:15 on a dry weight basis.

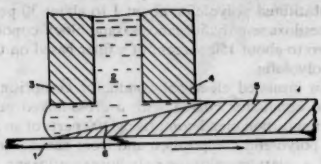
5. The product produced by the method of claim 1.

4,331,739

AMORPHOUS METALLIC STRIPS

Mandayam C. Narasimhan, Flanders, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 949,839, Oct. 10, 1978, Pat. No. 4,221,257, which is a division of Ser. No. 821,110, Aug. 2, 1977, Pat. No. 4,142,571, which is a continuation-in-part of Ser. No. 734,776, Oct. 22, 1976, abandoned. This application Mar. 7, 1980, Ser. No. 128,005
Int. Cl.³ B22D *11/06, 25/00*
U.S. Cl. 428—544 4 Claims



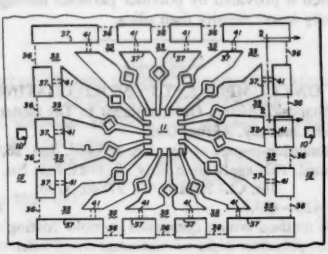
1. A strip of amorphous metal having a width of at least 7 millimeters, and having isotropic tensile properties.

4,331,740

GANG BONDING INTERCONNECT TAPE PROCESS AND STRUCTURE FOR SEMICONDUCTOR DEVICE AUTOMATIC ASSEMBLY

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 14, 1980, Ser. No. 140,040
Int. Cl.³ B22F *00/00;* H01R *43/00*
U.S. Cl. 428—572 9 Claims



1. A tape for the automatic assembly of semiconductor devices having a bonding pad array that is to be interconnected with elements of a secondary lead array, said tape including a plurality of sequential metal finger patterns comprising:

inwardly extending portions that form an array that mates with said bonding pad array;

outwardly extending portions that form an array that mates with said secondary lead array; and

a metal ring joining said fingers together to form a unitary structure, said ring including weakened points between said fingers.

7. The process of claim 1 wherein said tape is of all metal construction.

4,331,741

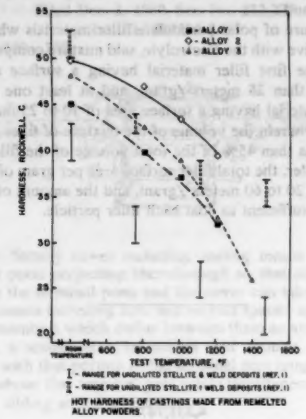
NICKEL-BASE HARD FACING ALLOY

Richard K. Wilson, Monroe, N.Y., assignor to The International Nickel Co., Inc., New York, N.Y.

Filed May 21, 1979, Ser. No. 40,685
Int. Cl.³ B32B *15/00;* C22C *19/05*
U.S. Cl. 428—679 5 Claims

1. A nickel-base alloy suitable for use as a hard surfacing

material and characterized by good weldability and elevated temperature wear resistance, said alloy consisting of (weight percent) about 27 to 30% chromium, about 7 to 9.5% molybdenum, about 4 to 6% tungsten, about 0.75 to 1.3% manganese,



0.05 to 0.5% titanium, 0.2 to 0.75% columbium, about 1.2 to 1.8% carbon, 1 to 1.75% silicon, iron up to about 5%, and the balance essentially nickel.

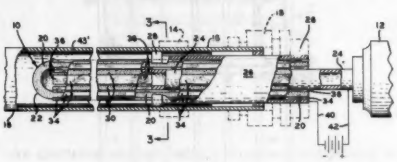
3. A weld overlay deposit formed from the alloy of claim 1.

4,331,742

SOLID ELECTROLYTE CELL

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Robert Richter, La Canada, Calif.

Filed Dec. 24, 1980, Ser. No. 220,214
Int. Cl.³ H01M 8/10
U.S. Cl. 429—33 **1 Claim**



1. A solid electrolyte cell characterized by a reduced electrical resistance and an enhanced ionic gas conductivity comprising:

A. a tubular body, having a closed end and an open end and formed of an ionized gas conductive material comprising eight percent (8%) yttria stabilized zirconia, said body being characterized by a pair of mutually spaced inner and outer surfaces, whereby a current of migrating ions in a gaseous state may be established therebetween;

B. a first plurality of mutually spaced, bar-shaped electrodes formed from a noble metal deposited on and extended along the outer surface of said body in parallelism with the axis thereof and having defined therebetween strips of the outer surface of said body, and a second plurality of mutually spaced bar-shaped electrodes deposited on and extended along the inner surface of said body in registry with said first plurality, whereby the strips of the inner and outer surfaces of said tubular body are caused to be exposed in registry between the electrodes deposited on said surfaces;

C. means supporting said tubular body in received concentric relation with a conduit for CO_2, whereby the strips of the outer surface of the body are contacted by CO_2 as CO_2 is caused to fill said conduit;

D. a fluid extraction conduit comprising an electrical conductor inserted into said body, at the open end thereof, electrically contacting each of the bar-shaped electrodes of said second plurality of electrodes;

E. a tubular conductor circumscribing said body near the open end thereof and electrically contacting each of the bar-shaped electrodes of said first plurality forming a common electrical connector therefor; and

F. electrical circuit means connected with said fluid extraction conduit and said tubular conductor for establishing an electrical potential between the first and second pluralities of electrodes.

4,331,743

METHOD FOR INCREASING RECYCLING LIFE OF NON-AQUEOUS CELLS

Arabinda N. Dey, Needham, Mass., and William L. Bowden, Nashua, N.H., assignors to Duracell International Inc., Tarrytown, N.Y.

Filed Sep. 2, 1980, Ser. No. 182,912
Int. Cl.³ H01M 10/44
U.S. Cl. 429—50 **16 Claims**

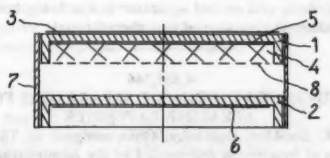
1. A method for improving the cycling life of a rechargeable cell containing an active anode metal subject to dendritic plating on charging, a porous cathode, an electrolyte solvent and a dissolved salt which is stable at charging voltages and capable of forming soluble oxidizing moieties, at higher voltages; which moieties are capable of scavenging and solvating insoluble electrically disconnected anode metal and anode metal in insoluble compounds within said cell and said salt being further capable of being recycled thereby; said method comprising charging said cell at a voltage above said charging voltage and sufficiently high whereby said salt forms said soluble oxidizing moieties at said cathode which scavenge and solvate insoluble electrically disconnected anode metal and anode metal in insoluble compounds with said salt being recycled thereby.

4,331,744

LEAD SALT ELECTRIC STORAGE BATTERY

Peter O. Henk, Olstykke, Denmark; Ziemowit A. A. Piontkowski, deceased, late of Copenhagen, Denmark, and by Christian G. Carlsen, administrator, Greve Strand, Denmark, assignors to Peter Axel Fischer, Hellerup, Denmark, a part interest

PCT No. PCT/DK79/00021, § 371 Date Mar. 12, 1980, § 102(e) Date Mar. 12, 1980, PCT Pub. No. WO80/00286, PCT Pub. Date Feb. 21, 1980
PCT Filed Jul. 11, 1979, Ser. No. 190,884
Claims priority, application Denmark, Jul. 12, 1978, 3136/78
Int. Cl.³ H01M 10/06
U.S. Cl. 429—59 **7 Claims**



1. Lead salt electric storage battery with electrodes of first order, having an active anode body comprising graphite, the combination comprising:

(a) the active anode body comprising a textile material graphitized at a temperature of at least 2500° C.;

(b) the active anode body is connected with an electrolyte-impervious, electrically conductive cell closure compris-

ing molded artificial resin with molded-in, uniformly distributed short-cut graphite fibers graphitized at a temperature of at least 2500° C.;

(c) the connection between the active anode body and the cell closure is established through a uniting interface layer consisting of artificial resin with graphite fibers embedded therein, said graphite fibers being graphitized at a temperature of at least 2500° C.;

(d) the electrolyte comprising a mixture of lead silicofluoride and lead methane sulfonate dissolved in water, the proportion of lead silicofluoride ranging from 100 to 0%.

4,331,745

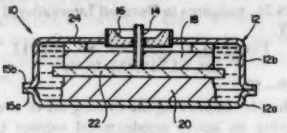
ELECTROCHEMICAL CELL STRUCTURE

Vincent O. Catanzarite, 7044 Mira Vista, Las Vegas, Nev. 89120

Filed Apr. 28, 1980, Ser. No. 144,660

Int. Cl.³ H01M 2/20

U.S. Cl. 429—60 **34 Claims**



1. An electrochemical cell arrangement, comprising

a primary cell including a casing having first and second terminal means electrically insulated from each other, and means located within said casing for producing a voltage across said terminal means for a discrete period of time which defines the useful life of said cell, said voltage producing means including anode means electrically connected to said first terminal means and positioned such that a segment thereof is juxtaposed with but mechanically spaced from a segment of said second terminal means, cathode means spaced from said anode means and electrically connected to said second terminal, an electrolyte means contained within and filling said casing in contact with said anode means and cathode means, and first separator means located between said anode and cathode means to provide physical separation therebetween, said anode and cathode means and said first separator means being located on a primary path for the passage of current; and

current bypass means cooperating with said primary cell such that after the primary cell's useful life when said voltage producing means no longer produces its own voltage, at least a portion of any current which is applied between said terminal means from an external source is diverted along a secondary electrochemical path different than said primary path, said secondary path including said segment of said anode means, said segment of said second terminal and second separator means located between said segments, said second separator means being constructed to allow the passage of ions therethrough.

4,331,746

ADVANCED INORGANIC SEPARATORS FOR ALKALINE BATTERIES

Dean W. Sheibley, Sandusky, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 238,790

Int. Cl.³ H01M 2/16

U.S. Cl. 429—144 **13 Claims**

1. A flexible, porous separator for a battery which has an alkaline electrolyte comprising a coating applied to a porous, flexible substrate, said coating comprising:

(a) thermoplastic rubber-based resin which is insoluble and unreactive in the alkaline electrolyte,

(b) a polar organic plasticizer which is reactive with the alkaline electrolyte to produce a reaction product which contains a hydroxyl group and/or a carboxylic acid group, and

(c) a mixture of polar particulate filler materials which are unreactive with the electrolyte, said mixture comprising at least one first filler material having a surface area of greater than 25 meters²/gram, and at least one second filler material having a surface area of 10 to 25 meters²/gram, wherein the volume of the mixture of filler materials is less than 45% of the total volume of the fillers and said binder, the total filler surface area per gram of binder is about 20 to 60 meters²/gram, and the amount of plasticizer is sufficient to coat each filler particle.

4,331,747

ELECTRIC STORAGE BATTERIES

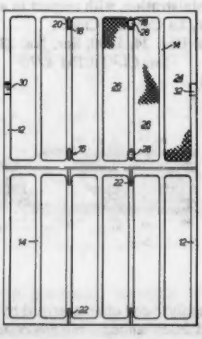
Keith Julian, Wilmslow, and Raymond C. Irving, Farnworth, nr. Bolton, both of England, assignors to Chloride Group Limited, London, England

Filed Jul. 18, 1980, Ser. No. 170,172

Claims priority, application United Kingdom, Jul. 20, 1979, 7925363

Int. Cl.³ H01M 4/72

U.S. Cl. 429—160 **8 Claims**



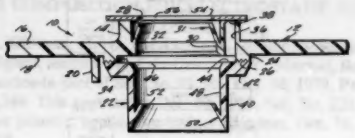
1. A multicell electric storage battery including a plurality of substantially planar frames of insulating material having two surfaces, each said frame comprising a perimeter member and one or more division elements, said perimeter member and said division elements together defining two or more active material support spaces, said frames being arranged in a stack extending in a direction normal to the plane of said frames, said perimeter member and said division elements of each said frame being connected to those of adjacent said frames, each said active material support space receiving an electrode, and every alternate said division member having on one of said surfaces a connector recess extending over a minor proportion of its length, the connector recesses on adjacent said frames being in division elements that are offset from one another, the active material support spaces on each side of each said division element in which a connector recess is formed receiving electrodes which are connected together by a connector which is received in said recess in said division element.

4,331,748

SLIDING SEAL BATTERY COVER

James S. Hardigg, Baptist Hill, and Edward W. Turner, Deerfield, both of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Dec. 3, 1980, Ser. No. 212,277
Int. Cl.³ H01M 2/08
U.S. Cl. 429—175 11 Claims



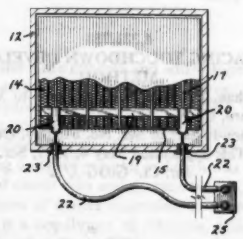
11. A battery cover including sealing means for sealing terminal posts projecting therethrough so that sliding action between the terminal posts and the cover can take place, said sealing means including first and second spaced apart flexible sealing members which define between them an annular chamber and a sealant material within said annular chamber in contact with that portion of the terminal post lying therein for sealing about that terminal post while simultaneously permitting the sliding action to occur.

4,331,749

STORAGE BATTERY STRUCTURE

Doyle Beck, Jr., 1021 N. Ann St., Boonville, Ind. 47601

Filed Nov. 14, 1980, Ser. No. 207,008
Int. Cl.³ H01M 2/02
U.S. Cl. 429—179 2 Claims



1. An electrical storage battery structure comprising a casing, plates disposed within said casing, and conductors having ends within said casing in electrical contact with said plates and directly extending through a side wall in said casing to a terminal remote from said casing, where said casing is fabricated from a plastic resin and said conductors are encased within plastic resin in a weathertight and non-electrical relationship with respect to said side wall and said casing.

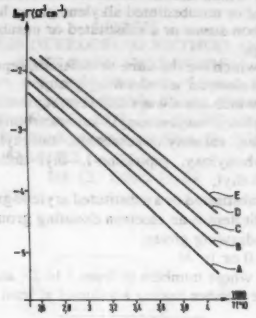
4,331,750

ALKALINE CATION CONDUCTIVE VITREOUS COMPOSITION AND A METHOD OF PREPARING SUCH A COMPOSITION

Jean-Pierre Malugani, Besancon, and Guy Robert, Morre, both of France, assignors to Societe Anonyme dite: GIPELEC, Levallois Perret, France

Filed Jan. 19, 1981, Ser. No. 226,404
Claims priority, application France, Feb. 29, 1980, 80 04547
Int. Cl.³ H01M 6/18
U.S. Cl. 429—193 6 Claims

1. A cation conductive solid electrolyte for an electrochemical generator, the electrolyte being a vitreous composition of general formula aP_2S_5, bLi_2S, cLiX, where X is an element chosen from the group consisting of chlorine, bromine and iodine and where a, b and c are numbers chosen so that the ratio b/(a+b) lies in the range 0.61 to 0.70 and the ratio



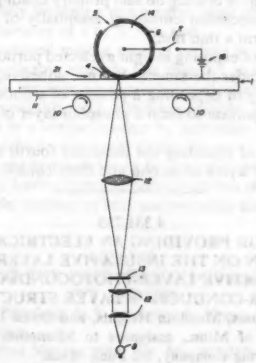
c/(a+b+c) is less than or equal to a limit value corresponding to the maximum solubility in the vitreous phase of LiX in the composition aP_2S_5, bLi_2S.

4,331,751

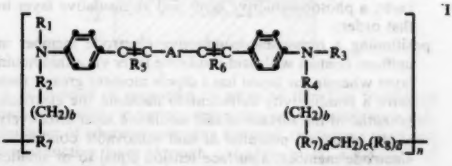
ELECTRICALLY PHOTOSENSITIVE MATERIALS AND ELEMENTS FOR PHOTOELECTROPHORETIC IMAGING PROCESSES

Henry V. Isaacson, Webster; Beth G. Wright, and Hal E. Wright, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,114
Int. Cl.³ G03G 17/04
U.S. Cl. 430—18 15 Claims



1. A photoelectrophoretic image comprising an electrically photosensitive material containing an electrically photosensitive polymeric compound of the structure:



wherein:

R_1 and R_3, which are the same or different, represent a substituted or unsubstituted alkyl group having from 1 to

18 carbon atoms or a substituted or unsubstituted aryl group;

R_2 and R_4, which are the same or different, represent a substituted or unsubstituted alkylene group having from 1 to 10 carbon atoms or a substituted or unsubstituted arylene group;

R_5 and R_6, which are the same or different, represent hydrogen or an electron withdrawing group;

R_7 and R_8, which are always different, represent oxy, imino, thio, carbonyloxy, oxycarbonyl, iminocarbonyl, carbonyldioxy, ureylene, carbonyloxycarbonyl, sulfonyl, iminosulfonyl, iminocarbonyloxy, pipiridine-1,4-diyl and 1-carbonylpiperidine-1,4-diyl;

Ar is an unsubstituted or a substituted arylene group wherein said substitutent is an electron donating group or an electron withdrawing group;

a and d are 0 or 1;

b and c are whole numbers of from 1 to 25; and

n is a whole number having a value of at least 2.

4,331,752

METHOD OF FORMING FLUORESCENT SCREENS OF COLOR PICTURE TUBES

Hiroshi Yokomizo; Masahiro Nishizawa; Yoshifumi Tomita; Kiyoshi Miura, and Osamu Sasaya, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,959

Claims priority, application Japan, Sep. 7, 1979, 54-114192

Int. Cl.³ G03C 5/00

U.S. Cl. 430—28 **2 Claims**

1. A method of forming a fluorescent screen of a color picture tube comprising:

a first step of precoating an emulsion containing a powder of acryl resin on an inner surface of a face plate of the color picture tube to form a primary coating;

a second step of coating on said primary coating a photosensitive composition consisting essentially of a diazonium salt to form a thin film;

a third step of exposing to light a selected portion of said thin film to render the same to become adhesive;

a fourth step of depositing a powder of a phosphor on said selected portion to form a phosphor layer of a first color; and

a fifth step of repeating the third and fourth steps to form phosphor layers of second and third colors.

4,331,753

METHOD FOR PROVIDING AN ELECTRICAL CHARGE PATTERN ON THE INSULATIVE LAYER OF AN INSULATIVE LAYER-PHOTOCONDUCTIVE LAYER-CONDUCTIVE LAYER STRUCTURE

Valdis Mikelsons, Mendota Heights, and Owen L. Nelson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 27, 1978, Ser. No. 963,897

Int. Cl.³ G03G 13/02, 13/24

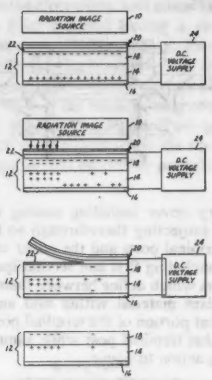
U.S. Cl. 430—55 **4 Claims**

1. A method for establishing electrical charge image including the steps of:

providing a multi-layered structure having a conductive layer, a photoconductive layer and an insulative layer in that order;

positioning a removable conductive electrode member in uniform contact with said insulative layer via a thin liquid layer wherein the liquid has a dipole moment greater than zero, a conductivity sufficient to maintain the electrical potential of the surface of said insulative layer effectively at the electrical potential of said removable conductive electrode member, a surface tension equal to or smaller than the critical surface tension of said insulative layer and with the liquid of said liquid layer that remains at said insulative layer upon removal of said removable electrode member evaporating in a time period that is less than the dark dielectric relaxation time constant of said photoconductive insulative layer;

exposing said photoconductive layer to a radiation image while applying a d.c. voltage between said conductive layer and said removable conductive electrode member to produce an electrical charge image at said insulative layer;



reducing the magnitude of the d.c. voltage applied between said conductive layer and said removable conductive electrode member;

removing said removable conductive electrode member; and

removing any liquid then remaining on said insulative layer by evaporation.

4,331,754

SELF-SPACING TOUCHDOWN DEVELOPMENT METHOD

Craig H. Stephan, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 618,874, Oct. 2, 1975, abandoned. This application May 4, 1977, Ser. No. 793,668

Int. Cl.³ G03G 5/12

U.S. Cl. 430—102 **3 Claims**

1. An imaging method, comprising:

(a) forming an electrostatic latent image on an imaging surface;

(b) providing a donor member having adhered to its surface a plurality of raised, discrete micro-elements said micro-elements vertically having essentially straight sides, the ratio of the length to width of said micro-elements being greater than one, at least one end of each element being tapered to resemble a wedge as seen in horizontal cross-section, the elements being so oriented on said donor surface that each element has a tapered end pointing in substantially the same direction as a tapered end of every other element;

(c) distributing dry toner on said donor member by moving a doctor edge having a supply of toner associated with it across the tops of said micro-elements in a direction sub-

stantially parallel to the lengthwise axis of said micro-elements; and

(d) bringing said donor member into self-spacing micro-element contact with said imaging surface to electrostatically transfer toner from the donor to the imaged areas of the image surface.

4,331,755

TONER COMPOSITION FOR ELECTROSTATIC IMAGE DEVELOPMENT

Yvan K. Gilliams, Hever, and Pierre R. De Roo, Schoten, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 89,385, Oct. 30, 1979, Pat. No. 4,271,249. This application Dec. 30, 1980, Ser. No. 221,451

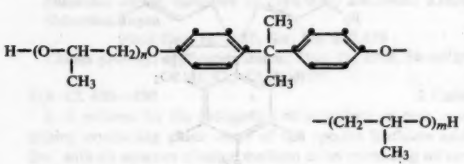
Claims priority, application United Kingdom, Oct. 31, 1978, 42515/78

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—106 **6 Claims**

1. A developer composition free of carrier particles and consisting essentially of powder particles having a Shore A hardness higher than 90 and consisting essentially of a colouring substance and more than 80% by weight of a mixture consisting of at least 30% by weight of:

a polyester derived from fumaric acid or a mixture of fumaric acid and isophthalic acid containing at least 95 mol % of fumaric acid and a polyol blend of propoxylated bisphenol characterized by the formula:



wherein m and n are integers and added together average from 2 to 7, in a proportion such that the ratio of carboxyl groups to hydroxyl groups is 1.2:1 to 0.8:1, with at least one of (1) a copolymer of ethylene, maleic acid and/or maleic anhydride wherein from 50 to 70 mol % of ethylene repeating units are present, and (2) a wax of the group consisting of castor wax and montan wax.

2. A composition of matter according to claim 1, wherein said copolymer is a copolymer of ethylene, maleic acid and maleic anhydride wherein the number of maleic acid units is larger than the number of maleic anhydride units.

3. A composition of matter according to claim 2, wherein the colouring substance is carbon black.

4,331,756

DEVELOPER COMPOSITIONS WITH TONER, COATED CARRIER AND LUBRICANT

Edward F. Mayer, San Jose; Arthur S. Diamond, Ventura, both of Calif., and Paul Chang, Hanover Park, Ill., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1980, Ser. No. 203,881

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—108 **12 Claims**

1. An electrophotographic developer composition comprising coated carrier particles together with toner particles, the concentration of the toner particles being from 5 to 75 g/Kg of carrier particles, and a lubricant additive, the concentration of the lubricant additive being from 0.5 to 1.5% by weight, based on the weight of the toner particles, the surface triboelectric relationship between the surface of the carrier and the surface of the lubricant additive being substantially zero.

2. An electrophotographic developer composition of claim 1 wherein the carrier particles are coated with a miscible mixture of a butadiene-acrylonitrile rubber containing from 20% to 40% by weight acrylonitrile, together with a polyurethane elastomer, said mixture being soluble in organic solvents.

4,331,757

DRY PROCESS DEVELOPING METHOD AND DEVICE EMPLOYED THEREFORE

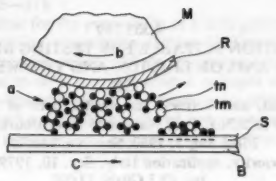
Susumu Tanaka, and Tateki Oka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Dec. 23, 1977, Ser. No. 863,616

Claims priority, application Japan, Dec. 29, 1976, 51-158110; Nov. 22, 1977, 52-141387

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—122 **3 Claims**



1. A magnetic brush developing method for electrophotography which consists essentially of the steps of mixing magnetizable toner and electrically insulating non-magnetizable toner in a predetermined weight ratio to form a developing material, and applying said developing material onto an electrical potential pattern formed on a recording medium to develop said electrical potential pattern into a visible image,

said magnetizable toner having a resistivity of 10^8 to 10^{14} Ω-cm and particle diameter of 3 to 30 μm,

said electrically insulating non-magnetizable toner having a particle diameter of 3 to 30 μm, and

said predetermined mixing ratio in weight being 1 part of said magnetizable toner to less than 2.5 to 0.01 parts of electrically insulating non-magnetizable toner, and both said magnetizable and non-magnetizable toners being consumed in a similar manner by attraction to the latent image thereby forming said visible image,

said non-magnetizable toner to be imparted with triboelectric charge having opposite polarity to that of said electrical potential pattern by said magnetizable toner.

4,331,758

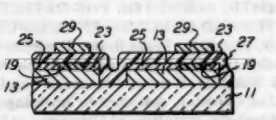
PROCESS FOR THE PREPARATION OF LARGE AREA TFT ARRAYS

Fang C. Luo, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,219

Int. Cl.³ C03C *5/00*; G03C *11/00*

U.S. Cl. 430—313 **6 Claims**



1. A method of preparing an array of thin film transistors which comprises, in vacuo, depositing onto a substrate a uniform layer of a semi-conducting material, depositing onto said semiconducting layer through a shadow mask, a plurality of discrete areas of an insulating material, depositing a uniform layer of a conducting material over the areas of insulating material and exposed portions of the semiconducting layer, removing the substrate containing the deposited layers from

the vacuum, photolithographically forming a masking layer on said uniform layer of conducting material having a predetermined pattern of openings therein, removing the portions of the conducting material unprotected by the masking layer to thereby form the source, drain and source bus conductors of the array, removing the semiconducting material exposed by removal of the conducting material, removing the masking layer, depositing a uniform layer of insulating material over the thus-formed structure, and depositing in discrete areas a pattern of conductive material to form the gate and gate bus conductors of the array.

4,331,759

COMPOSITION SUITABLE FOR TESTING BIOLOGICAL TISSUES AND/OR LIQUIDS, AND THE METHOD OF USE

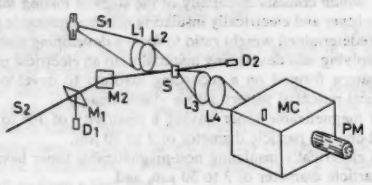
Ivo Giannini, and Vittorio Baroncelli, both of Rome, Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed Jul. 3, 1980, Ser. No. 165,787

Claims priority, application Italy, Sep. 10, 1979, 25568 A/79

Int. Cl.³ G01N *33/50*

U.S. Cl. 435—4 **1 Claim**



1. A composition suitable for testing for constituents of biological tissues and/or liquids consisting of a mixture of: (a) a dye at a concentration of between 10^{-3} and 10^{-4} M and chosen from the xanthene, axine, oxazine or acridine series, or from water-soluble dyes of the "diazo" series, or triphenylmethane, (b) a medium compatible with the biological tissue and/or liquid, and (c) a quencher substance which may be potassium iodide, sodium iodide or the salt of a paramagnetic transition metal and capable of de-energizing the dye molecules when it encounters them said quencher substance present in said mixture at a concentration of from 10^{-2} to 0.2 M.

4,331,760

DIAGNOSTIC AGENT FOR THE DETECTION OF LEUKOCYTES AND CHROMOGENS USEFUL THEREIN

Dieter Berger, Viernheim; Franz Braun, Rimbach; Günter Frey, Ludwigshafen am Rhein; Werner Güthlein, Mannheim-Neckarau, and Wolfgang Werner, Mannheim-Vogelstang, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

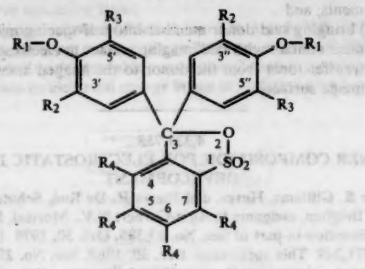
Filed May 25, 1979, Ser. No. 42,393

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2826965

Int. Cl.³ C12Q *1/44*; C07D *327/04*; G01N *33/48, 33/50*

U.S. Cl. 435—19 **9 Claims**

1. Diagnostic agent for the detection of leukocytes in body fluids, comprising an absorbent carrier which is impregnated with a chromogen and a buffer substance, wherein the chromogen is a sulfonphthalein ester of the formula



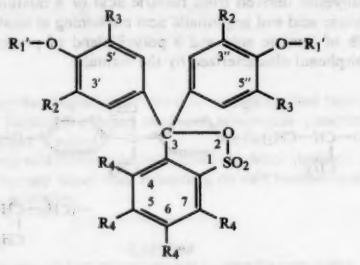
wherein

R_1 is an amino acid or peptide residue having a nitrogen protective group;

R_2 is a halogen atom or a lower alkyl radical; and

R_3 and R_4 are individually selected from hydrogen and halogen.

4. Sulfonphthalein ester of the formula



wherein

R_1 is an amino acid or peptide residue having a nitrogen protective group; and

R_2, R_3 and R_4 are individually selected from hydrogen and halogen.

4,331,761

STABILIZATION OF PEROXIDASE

Edward C. Dawson, Berghem; Jan D. H. Homan, and Bauke K. Van Weemen, both of Oss, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 6,934, Jan. 25, 1979, Pat. No. 4,228,240, which is a continuation of Ser. No. 831,817, Sep. 9, 1977, Pat. No. 4,169,012. This application Jan. 4, 1980, Ser. No. 109,627

Claims priority, application Netherlands, Sep. 24, 1976, 7310608

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ C12N *9/96*; G01N *33/54*; C12N *9/08*

U.S. Cl. 435—188 **12 Claims**

1. A method of manufacturing a composition useful as a diagnostic tool for enzyme immunoassay, comprising:

(a) freezing at a temperature from about −40 Deg. F. to about −50 Deg. F. an aqueous peroxidase composition containing (1) peroxidase in an amount from about 1 nanogram per milliliter to about 25 micrograms per milliliter, and (2) at least one polyvalent metal salt selected from the group consisting of the sulphate, the phosphate, the halide, and nitrate of any of Mg, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Ar, Zn, Ga, and Al present in a peroxidase-stabilizing amount of from about 0.0001 M to about 0.05 M to form a frozen ice; and

(b) subliming said frozen ice under reduced pressure to form a freeze-dried composition.

4,331,762

BACILLUS STEAROTHERMOPHILUS STRAIN UK 788 AND PROCESS FOR PRODUCING A USEFUL ENZYME

Hiroshi Nakajima, Uji; Kazuhiko Nagata, Nagaokakyo; Masao Kageyama, Uji; Toyohiko Suga; Tadao Suzuki, both of Kyoto, and Kenzo Motosugi, Uji, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Nov. 21, 1980, Ser. No. 209,097

Claims priority, application Japan, Apr. 18, 1980, 55-52198; Apr. 18, 1980, 55-52199; Apr. 25, 1980, 55-55647; May 12, 1980, 55-63180; May 21, 1980, 55-68018; Jul. 10, 1980, 55-94868

Int. Cl.³ C12N *9/04, 1/20*

U.S. Cl. 435—190 14 Claims

1. A biologically pure culture of strain FERM-P No. 5141 of *Bacillus stearothermophilus,* the cell of which is longer than about 10 microns and which permits easier release of an intracellular component than a standard strain *Bacillus stearothermophilus* IAM 11001.

4,331,763

PROCESS FOR PRODUCTION OF ASCORBATE OXIDASE

Eiji Matsumura; Hidehiko Ishikawa, and Hideo Misaki, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 16, 1980, Ser. No. 217,178

Claims priority, application Japan, Dec. 21, 1979, 54-167163

Int. Cl.³ C12N *9/04*

U.S. Cl. 435—190 2 Claims

1. A process for the production of ascorbate oxidase, comprising contacting plant tissue of the species Sechium edule Sw. with an aqueous alkaline medium as an extracting solvent, and separating ascorbate oxidase from the solvent solution thereof thus produced.

4,331,764

SEMINAL PLASMA RIBONUCLEASE AND METHOD FOR ITS RECOVERY

Karl H. Scheit, Göttingen, Fed. Rep. of Germany; Ergam R. S. P. Reddy, Hyderabad, India; Tangirala R. Murti, Hyderabad, India; Madhusudan W. Pandit, Hyderabad, India, and Pushpa M. Bhargava, Hyderabad, Anoh, India, assignors to Max-Planck-Gesellschaft, Göttingen, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,042

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911867

Int. Cl.³ C12N *9/22*

U.S. Cl. 435—199 4 Claims

1. Seminalplasma ribonuclease, characterized in that said ribonuclease has a content of 1 mole of cysteine per mole, a K_M of 0.42 mM with respect to poly-r-U, a K_M of 0.51 mM with respect to poly-r-(A-U)-transcript, and is inactive with respect to native RNA.

4,331,765

METHOD OF DEODORIZING *HOUTTUYNIA CORDATA* THUNB

Hiroshi Sakaguchi, c/o Takanoha Apt., No. 1-8-11, Nishikata, Bunkyo-ku, Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,646

Claims priority, application Japan, Aug. 27, 1980, 55/118140

Int. Cl.³ C07G *17/00*

U.S. Cl. 435—267 8 Claims

1. A method of deodorizing *Houttuynia cordata* Thunb which comprises heating green *Houttuynia cordata* Thunb to obtain a liquified Houttuynia, inoculating the thus obtained liquified Houttuynia as culture medium with yeast, koji or a mixture thereof, and fermenting the thus inoculated liquified Houttuynia.

4,331,766

COLLAGEN SOLUTION, PROCESS FOR ITS MANUFACTURE AND ITS USE

Udo Becker, Munich; Konrad Braun, Ebsdorfergrund, and Norbert Heimburger, Marburg an der Lahn, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,842

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929144

Int. Cl.³ C07G *17/00*

U.S. Cl. 435—273 7 Claims

1. A process for the preparation of a collagen solution capable of adsorbing coagulation factors VIII and XIII which comprises treating collagen-containing human or animal tissue with pepsin to form a pepsin-treated collagen and dialyzing said pepsin-treated collagen at a temperature in the range of 4° to 25° C. with a phosphate-buffered isotonic solution containing a basic amino acid at a concentration of 5 to 20 mmols/l.

4,331,767

IMMOBILIZED ENZYME COLUMN

Takao Nakajima, Nara; Masafumi Terada, Higashiosaka, and Tohru Mori, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

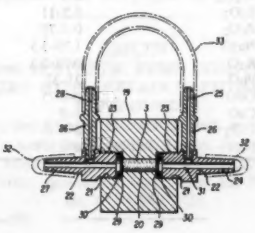
PCT No. PCT/JP79/00234, § 371 Date Apr. 22, 1980, § 102(e) Date Apr. 22, 1980, PCT Pub. No. WO80/00574, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 4, 1979, Ser. No. 198,109

Claims priority, application Japan, Jun. 9, 1978, 53/110102

Int. Cl.³ C12M *1/40*

U.S. Cl. 435—288 12 Claims



1. An immobilized enzyme column apparatus having an immobilized enzyme for analyzing chemical samples in a chemical analyzer comprising:

at least one column main body having a channel formed therethrough for accomodating said immobilized enzyme wherein said enzyme is disposed in said channel;

sample inlet means having an inlet formed at an outer end portion thereof and having an inner end portion connected to said column main body;

sample outlet means having an outlet formed at an outer end portion thereof and having an inner end portion connected to said column main body such that a flow path for said chemical samples is formed from said inlet means through said channel over said immobilized enzyme, and through said outlet means;

an air bubble inlet nozzle operatively associated with and communicating with said outlet means and disposed proximate to said immobilized enzyme such that the distance between said inlet nozzle and said immobilized enzyme is minimized;

an air bubble outlet nozzle operatively associated with and communicating with said inlet means and disposed proxi-

mate to said immobilized enzyme such that the distance between said inlet nozzle and said immobilized enzyme is minimized, and wherein said inlet nozzle, outlet nozzle and column main body are substantially integral and removable from said chemical analyzer as an integral unit; and

a filter disposed at each end portion of said channel wherein each of said samples enters said sample inlet means, flows past said air bubble outlet nozzle into said column main body channel, past said air bubble inlet nozzle and exits through said outlet means.

4,331,768

EARTHENWARE-APPEARING GLAZES FOR DINNERWARE

David C. Boyd, Corning; Kun-Er Lu, and Walter H. Tarcza, both of Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,460
Int. Cl.³ C03C *1/06, 3/10*
U.S. Cl. 501—18 **8 Claims**

1. A smooth, matte finish glaze demonstrating an earthenware appearance, excellent resistance to detergents, and lead and cadmium release values less than 7 ppm and 0.5 ppm, respectively, and containing crystallites of rutile and cassiterite, consisting essentially of a base frit and about 4–8% by weight SnO_2, 4–8% by weight TiO_2, the total SnO_2+TiO_2 constituting about 10–14% by weight, and about 0.025–0.04% by weight MnO_2, said base frit consisting essentially, as expressed in weight percent on the oxide basis, of about

SiO_2	37–49
Al_2O_3	4–7
B_2O_3	6.5–11
ZrO_2	0–1.75
Na_2O	1.75–3.5
K_2O	0.75–2.5
PbO	21–32
CdO	0–0.75
CaO	1–9
TiO_2	0–0.35
F	0–0.6

4,331,769

TINTED SPONTANEOUS OPAL GLASS

Paul S Danielson, and John E. Megles, Jr., both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,340
Int. Cl.³ C03C *3/08*
U.S. Cl. 501—32 **3 Claims**

1. A spontaneous opal glass having a tint ranging from ivory-through-beige-through-tan-to-brown and demonstrating a Fe^{+3} EPR reading between about 6.5–9 consisting essentially, expressed in weight percent on the oxide basis, of about

SiO_2	64.5 ± 2.0
Al_2O_3	6.25 ± 0.5
Na_2O	3.0 ± 0.5
K_2O	3.0 ± 0.5
MgO	1.25 ± 0.3
B_2O_3	4.5 ± 0.7
F	3.25 ± 0.5
CaO	14.5 ± 1.0
NiO	0.02 − 1.0

4,331,770

LOW LIQUIDUS GLASSES FOR TELEVISION TUBE FACEPLATES

David A. Thompson, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,960
Int. Cl.³ C03C *3/10*
U.S. Cl. 501—62 **2 Claims**

1. A glass suitable for the faceplate of a television picture tube having a softening point between 685°–700° C., an annealing point between 495°–515° C., a strain point between 455°–475°, a coefficient of thermal expansion between $98–100\times10^{-7}$/°C., a log resistivity at 250° C. greater than 9, a log resistivity at 350° C. greater than 7, a linear X-ray absorption coefficient at 0.6 A of at least 26 cm^{-1}, good resistance to X-ray and electron browning, and a liquidus temperature below 800° C. consisting essentially, in weight percent on the oxide basis as calculated from the batch, of:

SiO_2	58–65
Al_2O_3	1–3
CaO	1–4
SrO	6–12
BaO	2–9
PbO	1–3
Na_2O	5–9
K_2O	5–12
$Na_2O + K_2O$	14–18
TiO_2	0.3–1
CeO_2	0.05–0.5

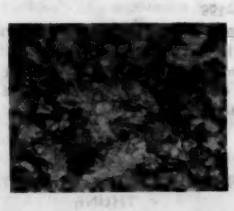
and being essentially free from MgO.

4,331,771

HIGH DENSITY SILICON OXYNITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed May 12, 1980, Ser. No. 148,853
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—97 **8 Claims**



1. A silicon oxynitride product consisting essentially of from 90 to 98% by weight of silicon oxynitride and 2 to 10% by weight of a minor glassy phase, said glassy phase being composed of silica and a minor quantity of a second metal oxide; said product being from about 85 to about 95% of theoretical density and having a microstructure which is a network of oxynitride crystal clusters with said minor glassy phase being located primarily in the interstices formed by the silicon oxynitride network.

4,331,772

METHOD OF MANUFACTURING NITRIDED SILICON PARTS

Jean-Paul Torre, Ormoy, and Joël Demit, Tarbes, both of France, assignors to Association pour la Recherche, France

Filed Oct. 17, 1980, Ser. No. 198,087
Claims priority, application France, Oct. 23, 1979, 79 26222
Int. Cl.³ C01B *21/068*; C04B *35/65*
U.S. Cl. 501—97 3 Claims

1. A method of manufacturing nitrided silicon parts comprising:

sintering a mixture of silicon powder and 5% to 15% by weight of aluminum under an atmosphere that is rich in nitrogen, further containing

a small quantity of carbon monoxide of less than 1% by volume, and

controlling the nitrogen and carbon monoxide partial pressures and the aluminum content of said mixture so that the oxidation reaction by the carbon monoxide on the nitrided silicon formed in the surface layers of the parts maintains therein an open porosity which is sufficient to allow the nitrogen to penetrate to the cores of the parts until the parts are homogeneously nitrided.

4,331,773

REFRACTORY COMPOSITION

Yasuo Hongo; Yoshinori Tuzuki, and Masao Miyawaki, all of Tamano, Japan, assignors to Nihon Tokushurozai Kabushiki Kaisha, Tamano, Japan

Continuation of Ser. No. 106,009, Dec. 21, 1980, abandoned, which is a continuation of Ser. No. 920,267, Jun. 20, 1978, abandoned. This application Feb. 11, 1981, Ser. No. 233,552
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—128 2 Claims

1. A refractory composition consisting essentially of

(1) no more than 99.7% by weight of a refractory aggregate,

(2) not less than 0.3% by weight of ρ-alumina as a binder,

(3) 0.2–8% by weight of glass powder, and

(4) an effective amount of 2% by weight of dispersant, the amount of said dispersant being based on the total amount of said aggregate having a particle size no greater than 74 micrometers.

4,331,774

PROCESS FOR THE PREPARATION OF HYDROCARBONS

Michael A. M. Boersma; Martin F. M. Post, and Lambert Schaper, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 17, 1980, Ser. No. 169,550
Claims priority, application Netherlands, Jul. 20, 1979, 7905643
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—714 9 Claims

1. A process for the preparation of an aromatic hydrocarbon mixture from a feed mixture of carbon monoxide and hydrogen wherein the molar ratio of hydrogen to carbon monoxide in the feed lies between 0.25 and 1.0 which comprises contacting said feed in a contacting zone at a temperature of 200°–500° C., a pressure of 1–150 bar and a space velocity of 50–5000 Nl gas/l catalyst/h with a mixture of two catalysts, a catalyst X containing zinc together with chromium and having the capability of catalyzing the conversion of an H_2/CO mixture into acyclic oxygen-containing hydrocarbons and a catalyst Y being a crystalline gallium silicate, having the following properties:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A of the specification,

(c) in the formula which gives the composition of the silicate, expressed in moles of the oxides, and in which, in addition to oxides of hydrogen, alkali metal and/or alkaline-earth metal and silicon, gallium oxide is present, the Ga_2O_3/SiO_2 molar ratio (m) is less than 0.1 to produce a contact product, and separating an aromatic hydrocarbon mixture from said contact product.

4,331,775

STABILIZATION OF POST-CHLORINATED VINYL CHLORIDE POLYMERS BY PHOSPHATE SALTS

Dale R. Hall, Avon Lake, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 159,532, Jun. 16, 1980. This application Apr. 29, 1981, Ser. No. 258,836
Int. Cl.³ C08J *0/40*
U.S. Cl. 521—85 3 Claims

1. A composition of matter comprising a particulate porous post-chlorinated vinyl chloride polymer having a density in the range of about 1.52 to about 1.61 grams/cc. at 25° C. and a chlorine content in the range of about 64% to about 70% by weight from about 5% to about 65% by volume of pore space, and having a metal salt of phosphoric acid evenly dispersed throughout each particle thereof.

4,331,776

POLYAMIDE MASTERBATCHES

Jean-Pierre Gazonnet, Saint Didier, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 79,889, Sep. 28, 1979, abandoned. This application May 20, 1981, Ser. No. 265,402
Claims priority, application France, Oct. 5, 1978, 78 28946
Int. Cl.³ C08J *9/06*
U.S. Cl. 521—91 17 Claims

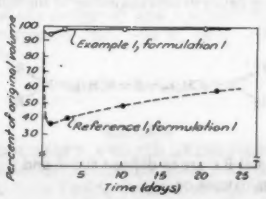
1. A masterbatch composition of matter comprising a plurality of granules of (i) a particulate polyamide intimately admixed with (ii) a pore-forming agent therefor, said particulate polyamide and said pore-forming agent admixture being coated with and agglomerated by (iii) a fused binder material which is compatible with said polyamide (ii).

4,331,777

FOAMING SYNTHETIC RESIN COMPOSITIONS STABILIZED WITH CERTAIN NAPHTHYL AMINE COMPOUNDS

Tsuneo Hoki, and Minoru Hisamatsu, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,270
Claims priority, application Japan, Mar. 12, 1980, 55-30239
Int. Cl.³ C08J *9/14*
U.S. Cl. 521—94 7 Claims



1. A foamable synthetic resin composition comprising a normally solid aliphatic olefin polymer, a volatile organic blowing agent, and 0.1 to 10 percent by weight, based on said olefin polymer, of at least one compound selected from the group of compounds represented by the following formula I:

$$A—NH—B—NH—A' \quad (I)$$

wherein A and A', which may be the same or different, each represent α- or β-naphthyl group and B represents a radical selected from a group consisting of p- and m-phenylene

groups, a p,p'-diphenylene group, and a m,m'-diphenylene group.

4,331,778

PROCESS FOR THE PRODUCTION OF POLYURETHANE PLASTICS

Claus-Dieter Sommerfeld, Cologne; Peter Haas, Haan; Kuno Wagner, Leverkusen, and Manfred Kapps, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,162

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854384

Int. Cl.³ C08G *18/14, 18/18*

U.S. Cl. 521—129 13 Claims

1. A process for the production of polyurethane plastics by reacting: (a) compounds containing at least two isocyanate-reactive hydrogen atoms and having a molecular weight of from 400 to 10,000, (b) polyisocyanates and, optionally, (c) chain extenders having a molecular weight in the range of from 32 to 400, foam stabilizers, water and/or organic blowing agents, wherein the improvement is in using a catalytic amount of combination catalysts containing tertiary nitrogen, said combinations comprising, (1) cross-linking catalysts corresponding to the following general formula:

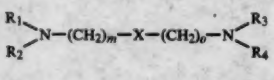
wherein

R_1, R_2, R_3 and R_4, which may be the same or different, represent C_1–C_5-alkyl radicals,

R' and R'' represent hydrogen or the same or different C_1–C_3-alkyl radicals, and

n represents an integer of from 1 to 10, preferably from 4 to 8,

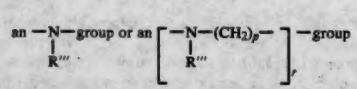
and (2) blowing catalysts corresponding to the following general formula:



wherein

R_1, R_2, R_3 and R_4, are as defined above and

X represents oxygen or



where

R''' represents a C_1–C_5-alkyl radical,

p represents an integer of from 2 to 4,

r represents an integer of from 1 to 3, and

m and o, which may be the same or different, represent integers ranging from 1 to 10 in value.

4,331,779

ETHYLENIC POLYMER FOAMS HAVING IMPROVED DIMENSIONAL STABILITY

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 14,019, Feb. 22, 1979, Pat. No. 4,215,202. This application Jul. 7, 1980, Ser. No. 165,991

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ C08L *23/06*

U.S. Cl. 521—134 15 Claims

1. A low density, substantially closed-cell ethylenic polymer foam comprising, based upon the total weight of such polymer foam, from about 5 to about 95 weight percent of a non-ionic ethylenic polymer and from about 5 to about 95 weight percent of non-neutralized carboxylated copolymer comprising, in addition polymerized form, a predominant amount of ethylene and from about 3 to about 45 weight percent, based upon the weight of such non-neutralized carboxylated copolymer, of a monoethylenically unsaturated carboxylic acid.

4,331,780

FLAME RETARDANT TRANSPARENT RESINOUS COPOLYMER

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 20, 1980, Ser. No. 132,198

Int. Cl.³ C08K *5/35*

U.S. Cl. 524—101 3 Claims

1. A flame retarded transparent resinous block copolymer composition comprising a transparent block copolymer containing about 50 to about 95 weight percent polymerized monovinyl aromatic compound and about 5 to about 50 weight percent polymerized conjugated diene and a flame retarding amount of flame retardant wherein all said flame retardant is tris-(dibromopropyl)isocyanurate.

4,331,781

PROCESS FOR THE PREPARATION OF A POLYVINYL ALCOHOL COMPLEX COMPOUND IN THE PRESENCE OF AN ORGANIC BORIC ACID DERIVATIVE

Wolfgang Zimmermann, Kelkheim, and Günther Pospich, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,811

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000839

Int. Cl.³ C08F *8/12*

U.S. Cl. 525—61 6 Claims

1. Process for the manufacture of a complex compound of polyvinyl alcohol and a compound forming complexes with hydroxy compounds, which complex compound is capable of forming an aqueous solution which comprises subjecting a polyvinyl ester in alcoholic solution to alcoholysis under conditions known per se in the presence of an organic boric acid derivative which is soluble in alcohol and which directly acts as complexing agent of which is transformed into a complexing agent under the reaction conditions.

4,331,782

HYDROXYBENZOIC ACID-EPOXY ADDUCT CAPPING AGENTS FOR POLYESTER RESINS

Gary L. Linden, Upper Arlington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Filed Mar. 5, 1981, Ser. No. 240,984

Int. Cl.³ C08G *63/20, 63/46, 18/42*

U.S. Cl. 525—173 19 Claims

1. A method for making a phenol-functional polyester which comprises:

(a) reacting a hydroxybenzoic acid with an epoxy-functional compound to form an ester-alcohol adduct; and

(b) reacting said adduct with additional polyester-forming ingredients under polyesterification conditions to make said phenol-functional polyester.

8. In a method for making a coating composition rapidly curable in the presence of a vaporous tertiary amine, said coating composition comprising a phenol-functional polyester polymer and a multi-isocyanate curing agent, the improvement for synthesizing said polymer which comprises:

(a) reacting a hydroxybenzoic acid with an epoxy-functional compound to form an ester-alcohol adduct; and

(b) reacting said adduct with a additional polyester-forming ingredients under polyesterification conditions to make said phenol-functional polyester polymer.

4,331,783

NOVEL BLOCK COPOLYMERS INCLUDING ACRYLONITRILE SEQUENCES AND GLUTARIMIDE UNITS AND PROCESSES FOR PREPARING SAME

Vladimir A. Stoy, Princeton, N.J., assignor to S.K.Y. Polymers, N.J.

Filed Sep. 17, 1980, Ser. No. 188,224
Int. Cl.[3] C08F *293/00, 220/48, 220/52*
U.S. Cl. 525—294 12 Claims

1. A novel block copolymer of a molecular weight of from 10,000 to 2,000,000 comprised of acrylonitrile sequences and sequences comprised of a major portion of glutarimide units said acrylonitrile sequences having a molecular weight of at least 400, said sequence of said major portion of glutarimide units having a molecular weight of at least 400.

4,331,784

POLYMER PARTICLES COMPRISING ETHYLENICALLY UNSATURATED MONOMERS AS MAIN CONSTITUENT AND HAVING LOCALIZED THEREON CONJUGATED DIOLEFIN (CO-)POLYMER LAYER

Yoshiyuki Ishibashi; Eijiro Tagami; Teruo Hiraharu, and Shiro Yasukawa, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,178
Claims priority, application Japan, Oct. 11, 1979, 54-129895
Int. Cl.[3] C08F *279/00*
U.S. Cl. 525—313 30 Claims

1. Polymer particles composed of particles of a polymer (I) consisting of 96 to 99.5% by weight of at least one ethylenically unsaturated monomer selected from the group consisting of aromatic vinyl compounds, alkyl acrylates whose alkyl group has 1 to 8 carbon atoms, alkyl methacrylates whose alkyl group has 1 to 12 carbon atoms and vinyl cyanide compounds and 4 to 0.5% by weight of at least one a,b-ethylenically unsaturated carboxylic acid, and a conjugated diolefin (co-)polymer (II), said (co-)polymer (II) being localized on the surface layer of the particles of the polymer (I) in substantially one place to form a consecutive layer in a polymer (I)/(co-)polymer (II) weight ratio of 100/10–100/60, wherein the (co-)polymer (II) consists of 100 to 50% by weight of a conjugated diolefin, wherein the conjugated diolefin is butadiene, isoprene or chloroprene, and 0 to 50% by weight of at least one ethylenically unsaturated momoner, wherein the ethylenically unsaturated monomer in the (co-)polymer (II) is at least one member selected from the group consisting of styrene, methyl methacrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate and acrylonitrile.

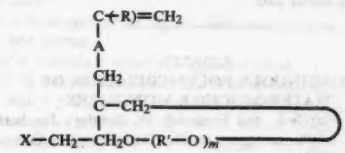
4,331,785

VINYL SUBSTITUTED CYCLIC POLYETHERS AND ADDITION POLYMERS THEREOF

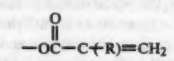
Thomas A. Chamberlin, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 961,159, Nov. 16, 1978, Pat. No. 4,256,855, which is a division of Ser. No. 751,870, Dec. 17, 1976, Pat. No. 4,139,539, which is a continuation-in-part of Ser. No. 517,703, Oct. 24, 1974, abandoned. This application Dec. 28, 1979, Ser. No. 107,813
Int. Cl.[3] C08F *8/42;* C08K *3/10*
U.S. Cl. 525—367 2 Claims

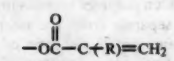
1. A process for concentrating an alkali metal or alkaline earth metal salt in aqueous solution comprising contacting an aqueous solution comprising said alkali metal or alkaline earth metal salt with a cross-linked, water-insoluble addition polymer of a compound represented by the formula



wherein m is an integer from 2 to about 10, —X is —Cl, —OR″ or —AC—R)═CH_2; —R is hydrogen or methyl; —R′— is ethylene, 1,2-propylene or 1,3-propylene; —R″ is hydrogen or lower hydrocarbyl; and —AC—R)═CH_2 is selected from the group consisting of —O—C—R)═CH_2 and



provided that when —X is —Cl, —AC—R)═CH_2 is



and further characterized in that when the cross-linked water-insoluble addition polymer is a homopolymer of the compound or a copolymer of the compound with a comonomer of monoethylene functionality, then —X is —AC—R)═CH_2; and when the cross-linked, water-insoluble addition polymer is a copolymer of the compound with a comonomer of multiple ethylene functionality then —X is —Cl, —OR″ or —AC—R)═CH_2.

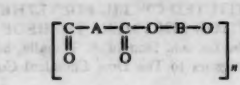
4,331,786

MOLDABLE AND/OR EXTRUDABLE POLYETHER-ESTER-AMIDE BLOCK COPOLYMERS

Paul R. Foy, Paris; Camille Jungblut, and Gerard E. Deleens, both of Orsay, all of France, assignors to ATO Chimie, Courbevoie, France

Continuation-in-part of Ser. No. 150,288, May 16, 1980, which is a continuation of Ser. No. 948,297, Oct. 3, 1978, Pat. No. 4,230,838, which is a continuation of Ser. No. 784,723, Apr. 5, 1977, abandoned, which is a continuation of Ser. No. 582,428, May 10, 1975, abandoned. This application Sep. 30, 1980, Ser. No. 192,488
Claims priority, application France, Oct. 2, 1980, 79 24486
Int. Cl.[3] C08L *77/00*
U.S. Cl. 525—408 19 Claims

1. A moldable and extrudable polyether-esteramide block copolymer of the formula



wherein A is a linear saturated aliphatic polyamide sequence formed from a lactam or amino acid having a hydrocarbon chain containing 4 to 14 carbon atoms or from an aliphatic C_6–C_{12} dicarboxylic acid and a C_6–C_9 diamine, in the presence of a chain-limiting aliphatic carboxylic diacid having 4 to 20 carbon atoms; said polyamide having an average molecular weight between 300 and 15000; and B is a polyoxyalkylene sequence formed from linear or branched aliphatic polyoxyalkylene glycols, said polyoxyalkylene glycols having a molecular weight of from about 200 to about 6000 and n indicates a sufficient number of repeating units so that said polyether-ester-amide block copolymer has an intrinsic viscosity of from about 0.8 to about 2.05.

4,331,787

CONTINUOUS POLYMERIZATION OF WATER-MISCIBLE MONOMERS

William J. Fairchok, and Frederick W. Stanley, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 31, 1980, Ser. No. 174,295
Int. Cl.³ C08F 2/32
U.S. Cl. 523—324 5 Claims

1. A process for polymerizing a water-miscible monomer comprising the steps of (1) passing a mixture of a water-immiscible, organic liquid lubricant and an aqueous phase containing at least about 20 weight percent of the water-miscible monomer through a reactor having (a) a cross-section sufficiently narrow to effect suitable heat transfer from the mixture and (b) internal surfaces which are not wetted by the aqueous solution and (2) subjecting said mixture to conditions sufficient to polymerize the monomer in the reactor thereby forming a water-soluble polymer of the monomer which polymer remains in the aqueous phase and is maintained separate from the internal surfaces of the reactor by the organic liquid, the ratio of the lubricant to aqueous phase is sufficient to increase flow of the aqueous phase through the reactor.

4,331,788

PROCESS OF POLYMERIZING VINYL CHLORIDE IN SEEDED MICROSUSPENSION

Claude Arnal, Saint-Auban; Nicolas Fischer, Ecully, and Jean-Bernard Pompon, Saint Auban, all of France, assignors to Chloe Chimie, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,466
Claims priority, application France, Aug. 28, 1979, 79 21524
Int. Cl.³ C08F 2/20, 4/50
U.S. Cl. 526—91 5 Claims

1. A process for the preparation of homo- and co-polymers of vinyl chloride by polymerization in seeded microsuspension, comprising polymerizing in microsuspension vinyl chloride or a mixture of vinyl chloride and at least one copolymerizable monomer in the presence of one or more seeding substances in the form of previously prepared dispersions of particles of vinyl polymers produced by polymerization in microsuspension and contains all the organo-soluble initiator required for polymerization, activating the initiator throughout the polymerization by addition of previously prepared organo-soluble metal complex or formed in situ by reaction between a water-soluble metal salt and a complexing agent, and characterized in that nitric acid is associated with the organo-soluble metal complex in the molar ratio of nitric acid/metal salt within the range of 0.1 to 5.

4,331,789

POLYMERIZATION USING A SELENIUM OR TELLURIUM TREATED CATALYST

Gil R. Hawley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 130,632, Mar. 14, 1980, Pat. No. 4,295,998.
This application May 6, 1981, Ser. No. 260,947
Int. Cl.³ C08F 4/22, 4/24
U.S. Cl. 526—96 10 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule under polymerization conditions with a catalyst produced by subjecting silica containing a chromium compound to a treatment comprising a first step wherein said silica containing said chromium compound is contacted with a treating agent selected from at least one of selenium or tellurium under nonoxidizing conditions at a temperature of at least 370° C. and a subsequent second step wherein it is contacted with an oxidizing ambient at a temperature within the range of 370° to 900° C.

4,331,790

SUPPORTED CATALYST FOR THE POLYMERIZATION OF OLEFINS

Ferinando Ligorati, Usmate; Renzo Invernizzi, and Roberto Catenacci, both of Milan, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Nov. 19, 1979, Ser. No. 95,892
Claims priority, application Italy, Nov. 21, 1978, 29967 A/78
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—119 4 Claims

1. In a process for the homo- or copolymerization of olefins by the low pressure Zigeler method, using a catalyst consisting of the combination of an organo-metallic compound of a metal of Group I, II or III of the Periodic Table of the Elements and titanium tetrachloride supported on a carrier, the improvement comprising using a carrier consisting of a mixture of anhydrous $MgCl_2$ with an alkoxy- or alkoxychlorotitanate in a $MgCl_2$/titanate molar ratio of from 0.01 to 1:1, wherein the organo-metallic compound is used in a molar excess with respect to the titanium tetrachloride and is selected from the group consisting of alkyl-aluminum compounds which are in turn selected from the group consisting of aluminum-triethyl and aluminum-tri-isobutyl and alkyl-aluminum halides and wherein said titanate is selected from the group consisting of tetramethoxytitanate, tetraethoxytitanate and ethoxy-chlorotitanates.

4,331,791

POLYMERIZATION PROCESS USING HIGH MOLECULAR WEIGHT EPOXIDES

Raymond G. Rohlfing; Melvin B. Welch, both of Bartlesville, Okla., and Richard E. Dietz, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 15, 1980, Ser. No. 178,279
Int. Cl.³ C08F 2/14, 2/34, 6/08
U.S. Cl. 526—125 15 Claims

1. A polymerization process comprising:

polymerizing in a polymerization zone at least one olefinic monomer in the presence of a polymerization catalyst and diluent to produce a polymerization zone product comprising a mixture of diluent, polymer, monomer and residual polymerization catalyst;

removing at least a portion of the polymerization zone product from the polymerization zone as a polymerization zone effluent stream;

treating the polymerization zone effluent stream as it is being removed from the polymerization zone and conveyed to a flash zone with a high molecular weight epoxide having greater than about 12 carbon atoms in an amount effective to deactivate residual catalyst; then

flashing the polymerization zone effluent stream in the flash

zone to produce a polymer product stream comprising polymer and substantially all of the high molecular weight epoxide and a recycle stream containing predominantly unreacted monomer and diluent.

4,331,792

CONTINUOUS PROCESS FOR PRODUCTION OF COPOLYMER OF AN ALKALI METAL VINYL SULFONATE AND ACRYLIC ACID

Louis A. Goretta, Naperville, and Robert R. Otremba, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 27, 1980, Ser. No. 153,491
Int. Cl.³ C08F 220/06
U.S. Cl. 526—229 12 Claims

1. A continuous process for the production of a copolymer of an alkali metal vinyl sulfonate and acrylic acid which comprises continuously feeding an aqueous solution of an alkali metal vinyl sulfonate and acrylic acid together with a polymerization initiator to a reaction zone and copolymerizing said alkali metal vinyl sulfonate and acrylic acid, said reaction zone being maintained at a temperature sufficiently high to effect copolymerization of said alkali metal vinyl sulfonate and acrylic acid, the residence time of said alkali metal vinyl sulfonate and acrylic acid in said reaction zone being sufficient to form a copolymer thereof and being from about three to ten minutes, and continuously recovering said copolymer from said reaction zone.

4,331,793

HYDROCURABLE AMBIENT CURING POLYEPOXIDE COATING AND ADHESIVE COMPOSITIONS AND METHOD OF USING THEM

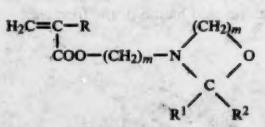
William D. Emmons, Huntingdon Valley, and Wayne E. Feely, Rydal, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 116,693, Jan. 30, 1980. This application Mar. 19, 1981, Ser. No. 245,297
Int. Cl.³ C08F 24/00, 26/06
U.S. Cl. 526—260 3 Claims

1. A vinyl addition copolymer, adapted to be used as the binder for a coating, impregnating, or adhesive composition, comprising an anhydrous organic solvent solution copolymer of monoethylenically unsaturated monomers comprising

(1) at least one monomer selected from glycidyl acrylate, glycidyl methacrylate, glycidyl vinyl ether, and glycidyl vinyl sulfide,

(2) at least one monomer of the formula:



(I)

wherein

R is CH_3 or H,

m is 2 or 3, and

R^1 and R^2 individually are separate alkyl groups having at least one carbon atom or are joined directly together to form a C_4 to C_5 alkylene group, and

(3) optionally, other monomer(s) inert to the epoxy group(s) in (1) and the cyclic oxazolidinyl group(s) in (2); the amount of glycidyl monomer of (1) in the copolymer being sufficient to provide at least about one equivalent of epoxy content in the copolymer for each equivalent therein of amine content attributable to the cyclic groups of (2).

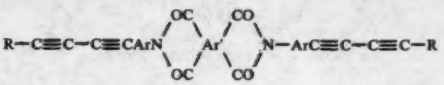
4,331,794

POLYMERIZATION PRODUCTS OF DIIMIDES HAVING TERMINAL DIACETYLENE GROUPS

Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Co., executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Oct. 22, 1980, Ser. No. 199,607
Int. Cl.³ C07D 209/34, 471/00; C08F 22/40
U.S. Cl. 526—262 20 Claims

1. The addition polymerization products of the diimide monomer of the formula:



in which:

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

Ar is a divalent aromatic organic radical;

Ar' is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar' except that in the case of Ar' being a naphthalene radical, one or both pairs of carbonyl groups may be attached to peri-carbon atoms.

4,331,795

TWO LIQUID TYPE ADHESIVE COMPOSITION COMPRISING A COBALT SALT CURE ACCELERATOR IN ONE PORTION AND A HYDROPEROXIDE WITH AN AROMATIC AMINE AND/OR A PYRIDINE DERIVATIVE CURE ACCELERATOR IN THE SECOND PORTION

Kenkichi Ukita; Tatsuo Nakano, and Ikuji Kishi, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,456
Claims priority, application Japan, Jul. 23, 1979, 54-92653
Int. Cl.³ C08F 4/34, 4/40, 4/70; C09J 3/14
U.S. Cl. 526—273 9 Claims

1. In a two liquid adhesive composition which is a combination of component A and component B both of which comprise a butadiene oligomer having a terminal ethylenically unsaturated group and an acrylic monomer as major components in a ratio on a percentage basis ranging from 90 to 40:10 to 60, the improvement comprising:

said component A further comprising an organic hydroperoxide and an aromatic amine and/or a pyridine derivative and said component B further comprising a cobalt salt of an organic acid.

4,331,796

SECONDARY RECOVERY PROCESS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 917,051, Jun. 19, 1978, Pat. No. 4,228,019. This application Apr. 4, 1980, Ser. No. 137,150
Int. Cl.³ C08F 228/02
U.S. Cl. 526—287 4 Claims

1. A water-soluble copolymer comprising repeating units of (a) vinyl sulfonic acid alkoxylated with a material selected from the group consisting of:

(I) ethylene oxide and

(II) a mixture of ethylene oxide and propylene oxide and wherein in the said mixture the weight percent of ethylene oxide is about 60 to about 95, and (b) acrylamide.

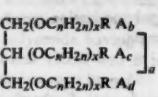
4,331,797

ESTER CONTAINING SILYLATED POLYETHERS

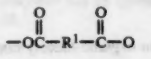
Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 74,188, Sep. 10, 1979. This application Jul. 18, 1980, Ser. No. 170,297
Int. Cl.³ C08G 77/04
U.S. Cl. 528—26 18 Claims

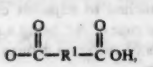
1. Silylated polyethers of the general formula



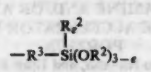
in which at least one R is a radical of the formula

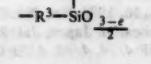


in which the radical is linked to the polyether through an ester linkage and the remaining R groups are selected from the group consisting of hydroxyl, hydrocarbonoxy radicals having up to 18 carbon atoms and a radical of the formula

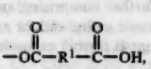


R^1 is a divalent hydrocarbon radical selected from the group consisting of $(-CH_2)_y$, —CH=CH— and a cyclic radical selected from the group consisting of C_6H_4, C_6H_8, C_6H_{10} and $C_{10}H_6$; A is a silicon containing radical selected from the formulas





in which R^2 is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, R^3 is a divalent hydrocarbon radical having from 1 to 18 carbon atoms, a is a number of from 0 to 4, b, c and d are each numbers of from 0 to 1 and the sum of b, c and d must be at least 1 and when b, c or d are 0, then R is selected from the group consisting of a hydroxyl, a hydrocarbonoxy radical and a radical of the formula



e is a number of from 0 to 2, n is 2, 3 or 4, x is a number of at least 1 and up to 600 and y is a number of from 0 to 8.

4,331,798

PRODUCTION OF AROMATIC POLYETHERS WITH INFUSIBLE PARTICULATE SUBSTANCE

Philip A. Staniland, Tewin Wood, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 4,532, Jan. 18, 1979, abandoned. This application Sep. 20, 1979, Ser. No. 77,476
Int. Cl.³ C08G 8/02, 75/20
U.S. Cl. 528—125 16 Claims

1. A process for the production of an aromatic polyether containing linkages selected from the group consisting of —SO_2— and —CO— groups comprising heating in a reaction vessel, a reaction medium comprising (i) a substantially equimolar mixture of (a) at least one bisphenol and (b) at least one dihalobenzenoid compound, or (ii) at least one halophenol, in which dihalobenzenoid compound or halophenol the halogen atoms are activated by —SO_2— or —CO— groups ortho or para thereto, with at least one alkali metal carbonate or bicarbonate to effect a polycondensation reaction to form the aromatic polyether, the amount of carbonate or bicarbonate being such that there is at least one alkali metal atom for each phenol group present, wherein the polycondensation reaction is carried out in the absence of a solvent and in the presence of a sufficient quantity of an infusible, under the conditions of reaction, particulate substance acting as a support for the polyether which is formed in the polycondensation reaction so as to yield by the end of the polycondensation reaction, a reaction medium in the form of a free-flowing powder which includes the aromatic polyether and the particulate substance and which may be discharged cleanly from the reaction vessel.

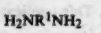
4,331,799

COPOLYMERS OF ETHERIMIDES AND AMIDEIMIDES

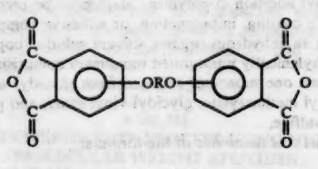
Fred F. Holub, Schenectady, N.Y., and Gary A. Mellinger, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 110,894, Jan. 10, 1980, abandoned. This application Mar. 2, 1981, Ser. No. 239,754
Int. Cl.³ C08G 73/14
U.S. Cl. 528—185 29 Claims

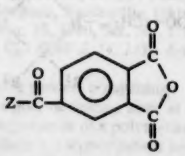
1. A method for making copolymers of etherimide units and amideimide units which comprises simultaneously interacting a mixture of ingredients comprising (I) an organic diamine of the formula:



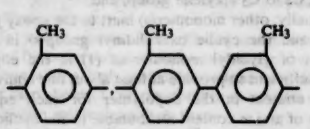
(II) An aromatic bis (etheranhydride) of the general formula:



and (III) A trimellitic acid halide of the formula:



where Z is halogen, R is a member selected from the class consisting of (a) the following divalent organic radicals:



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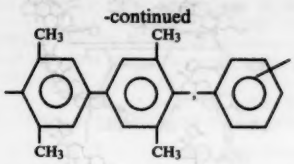
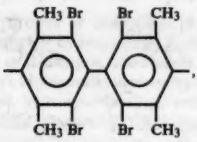
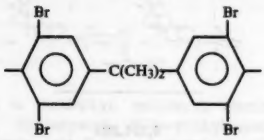
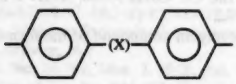


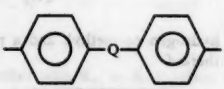




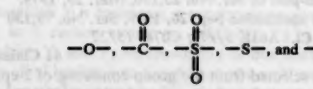
and (b) divalent organic radicals of the general formula:



where X is $-C_yH_{2y}-$, y is a whole number equal to from 1 to 5 inclusive, and R^1 is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6-20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2-20 carbon atoms, (c) $C_{(2-8)}$ alkylene terminated polydiorganosiloxanes, and (d) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



and x is a whole number equal to from 1 to 5, inclusive.

4,331,800

PROCESS FOR PRODUCING AROMATIC POLYESTERS HAVING AN INCREASED DEGREE OF POLYMERIZATION

Hiroo Inata, Hino; Shunichi Matsumura, Hachioji, and Makoto Ogasawara, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

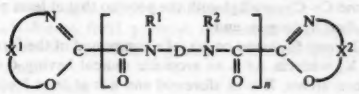
Filed Apr. 28, 1980, Ser. No. 144,036

Claims priority, application Japan, May 2, 1979, 54/53352; May 2, 1979, 54/53352; May 2, 1979, 54/53353; Jun. 6, 1979, 54/69864; Jun. 8, 1979, 54/71154; Jul. 16, 1979, 54/89323; Jul. 26, 1979, 54/94185; Jul. 26, 1979, 54/94186; Sep. 25, 1979, 54/121924; Oct. 2, 1979, 54/126397; Dec. 20, 1979, 54/164683; Dec. 25, 1979, 54/167624; Jan. 14, 1980, 55/2129

Int. Cl.³ C08G *69/44, 63/68*

U.S. Cl. 528—289 38 Claims

1. A process for producing an aromatic polyester having an increased degree of polymerization, which comprises reacting a substantially linear, fiber forming aromatic polyester containing terminal carboxyl groups and having an aromatic dicarboxylic acid as a main acid component at an elevated temperature with a bis-cyclic imino ether compound of the formula



(I)

wherein X^1 and X^2 are identical or different and each represents a divalent hydrocarbon group which is non-reactive under the reaction conditions and has 2 or 3 carbon atoms as members of the imino ether ring, R^1 and R^2 are identical or different and each represents a hydrogen atom or a monovalent hydrocarbon group, or R^1 and R^2 may be linked to each other to form a 5- or 6-membered ring together with D and the two nitrogen atoms to which they are bonded, D represents a divalent hydrocarbon group non-reactive under the reaction conditions which may contain a hetero atom, and n is 0 or 1, thereby bonding the molecular chains of the aromatic polyester to each other by the terminal carboxyl groups thereof to rapidly form said aromatic polyester having an increased degree of polymerization.

32. An aromatic polyester obtained by the process of any one of claims **1**, **16** and **20** wherein said aromatic polyester comprises ethylene terephthalate or tetramethylene terephthalate as a main recurring unit.

4,331,801

PROCESS FOR THE PREPARATION OF POLYARYLENE SULPHIDES

Karsten Idel, Krefeld, and Josef Merten, Korschenbroich, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,364

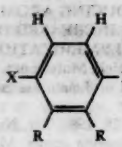
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930797

Int. Cl.³ C08G *75/14*

U.S. Cl. 528—388 7 Claims

1. In the process for preparing a polyarylene sulphide by polycondensing at a temperature of from 160°-285° C. for up to 60 hours

(a) a p-dihalogenobenzene which consists of 50-100 mol % of a compound of the formula



and 0–50 mol % of a compound of the formula

wherein X is fluorine, chlorine, bromine or iodine and each R is independently selected from the group consisting of hydrogen, C_1–C_{20}-alkyl, C_5–C_{20}-cycloalkyl, C_6–C_{24}-aryl, C_7–C_{24}-alkaryl and C_7–C_{24}-aralkyl with the proviso that at least one R is other than hydrogen; and

(b) 0–2.0 mol %, based on (a), of a compound of the formula Ar X_n wherein Ar is an aromatic radical having 6 to 24 carbon atoms, X is as aforesaid and n is at least 3 with

(c) an alkali metal sulphide in

(d) a polar solvent, the molar ratio of (a) to (c) being from 0.98:1 to 1.02:1 and the molar ratio of (c) to (d) being from 1:2 to 1:10, the improvement wherein said polycondensation is carried out in the presence of 0.05–2.0 mols of a di-alkali metal salt of a phosphonic acid per mol of (c), said phosphonic acid being of the formula

wherein R_1 is hydrogen, C_1–C_{20}-alkyl, C_5–C_{20}-cycloalkyl, C_6–C_{24} aryl, C_7–C_{24}-alkaryl, C_7–C_{24}-aralkyl, C_2–C_{24}-alkenyl, C_2–C_{20}-alkinyl or C_5–C_{20}-cycloalkenyl.

4,331,802

ORGANOMETALLIC REAGENTS AND THEIR USE IN THE SYNTHESIS OF CARDENOLIDES AND ISOCARDENOLIDES

Karel Wiesner; Rinaldo Marini-Bettolo; Connie S. J. Tsai, and Thomas Y. R. Tsai, all of Fredericton, Canada, assignors to Advance Biofactures Corporation, Lynbrook, N.Y.

Filed Oct. 1, 1980, Ser. No. 193,175

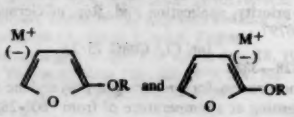
Int. Cl.³ C07J *7/00*

U.S. Cl. 536—5 **6 Claims**

1. A method for synthesizing a cardenolide or an isocardenolide which comprises the steps of:

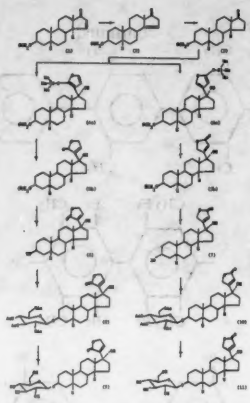
(a) subjecting an α,β-unsaturated steroidal 17-ketone to an acid catalyzed double bond shift followed by hydrogenation to produce a (C/D cisoid) ketone;

(b) treating said ketone with an organo-metallic reagent selected from the group consisting of



where R is a readily removable blocking group and M^+ is a metal ion to yield a labile tertiary alcohol; and

(c) acidifying said alcohol to produce said cardenolide or isocardenolide.



4,331,803

NOVEL ERYTHROMYCIN COMPOUNDS

Yoshiaki Watanabe, Tokyo; Shigeo Morimoto, and Sadafumi Omura, both of Saitama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

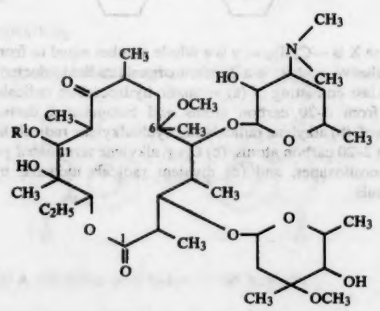
Filed May 19, 1981, Ser. No. 266,060

Claims priority, application Japan, Jun. 4, 1980, 55-75258; Nov. 12, 1980, 55-159128

Int. Cl.³ C07H *17/08;* A01N *9/00*

U.S. Cl. 536—7.2 **3 Claims**

1. An erythromycin compound of the formula



wherein R^1 is hydrogen or methyl, and a pharmaceutically acceptable salt thereof.

4,331,804

2-EPI-FORTIMICIN A AND DERIVATIVES

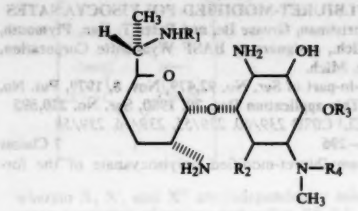
John S. Tadanier, Waukegan, Ill.; Robert Hallas, Kenosha, Wis., and Jerry R. Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 25,236, Mar. 29, 1979, abandoned. This application Sep. 26, 1979, Ser. No. 79,130

Int. Cl.³ A61K *31/71;* C07H *15/22*

U.S. Cl. 424—180 **41 Claims**

1. A compound selected from the group consisting of 2-epi-fortimicin A, 2-epi-fortimicin B or a 2-epi-fortimicin B derivative represented by the formula:



wherein R_1 is hydrogen or loweralkyl; R_2 is hydrogen or hydroxy; R_3 is methyl or hydrogen; and R_4 is selected from the group consisting of hydrogen, loweralkyl, aminoloweralkyl diaminolowcralkyl, N-loweralkylaminoalkyl, N,N-diloweralkylaminoloweralkyl, hydroxyloweralkyl, aminohydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, acyl of the formula

wherein R_5 is loweralkyl, aminoacyl, diaminoloweracyl, diaminoacyl, hydroxyacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted amino acyl; and the pharmaceutically acceptable salts thereof.

4,331,805

V-TRIAZOLYL-[4,5-d]-PYRIMIDINES

Ian J. Fletcher, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

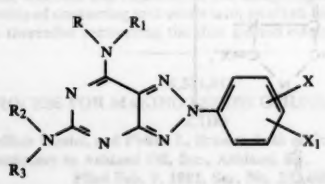
Division of Ser. No. 16,769, Mar. 2, 1979, Pat. No. 4,236,003, which is a division of Ser. No. 846,875, Oct. 31, 1977, Pat. No. 4,157,443. This application May 30, 1980, Ser. No. 156,947

Claims priority, application Luxembourg, Nov. 11, 1976, 76169; Switzerland, Jul. 11, 1977, 8523/77

Int. Cl.³ C07D *487/04;* C09K *11/06*

U.S. Cl. 544—81 **4 Claims**

1. A v-triazolyl[4,5-d]pyrimidine of the formula



(4)

in which R together with R_1, or R_2 together with R_3, taken with the N to which they are attached, form pyrrolidino, piperidino, morpholino, N'-hydroxyethyl piperazino or N'-hydroxyethylpiperazino quaternised by alkyl having 1 to 4 carbon atoms, X is hydrogen, methyl, chlorine, alkoxy having 1 to 4 carbon atoms, allyloxy, hydroxyalkyloxy having 2 to 4 carbon atoms, alkoxyalkoxy having 3 to 6 carbon atoms, benzyloxy, phenoxy, phenoxypropoxy, sulpho, cyano, —COOY, in which Y is hydrogen, a salt-forming cation or alkyl having 1 to 4 carbon atoms, or $—SO_2NY_1Y_2$ or $—CONY_1Y_2$, in which Y_1 and Y_2 independently of one another are hydrogen or alkyl having 1 to 4 carbon atoms or X and X_1 together are 3,4-methylenedioxy or 3,4-ethylenedioxy or 3,4-methyleneoxymethyleneoxy, and X_1 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or chlorine.

4,331,806

DITHIOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

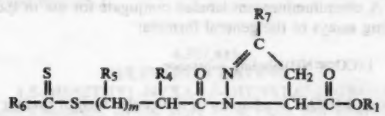
Rudiger D. Hangwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 61,729, Jul. 30, 1979, Pat. No. 4,288,368. This application Dec. 8, 1980, Ser. No. 214,152

Int. Cl.³ C07D *401/12, 403/12, 405/12, 413/12*

U.S. Cl. 544—140 **4 Claims**

1. A compound having the formula



or a non-toxic physiologically acceptable basic salt thereof, wherein

R_1 is hydrogen, alkyl, aryl or arylalkyl;

R_4 is hydrogen or alkyl;

R_5 is hydrogen, alkyl or trifluoromethyl;

R_6 is thienyl, furyl, pyrrolyl, imidazolyl, oxazolyl, thiazoly, pyrazolyl, pyridinyl, pyrimidinyl, morpholinyl, or piperazinyl;

R_7 is aryl; and

m is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with 1, 2 or 3 halogen, alkyl, alkoxy, sulfamyl, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifuloromethyl, cyano or carboxyl groups and the terms "alkyl" and "alkoxy," unless otherwise defined, refer to groups having 1 to 7 carbon atoms.

4,331,807

PYRIDAZINE UREA PLANT GROWTH REGULATORS

Toshihiko Okamoto, 1-7-19, Shinoharakita, Kohokuku, Yokohamashi, Kanagawa; Yo Isogai, 1-1-2-609, Kamiyoga, Setagayaku, Tokyo; Koichi Shudo, 2000-10-2-116, Kosugayacho, Totsukaku, Yokohamashi, Kanagawa, and Soshiro Takahashi, Saitama, all of Japan, assignors to Toshihiko Okamoto, Kanagawa; Yo Isogai, Tokyo; Koichi Shudo, Kanagawa and Susumu Sato, Saitama, all of, Japan

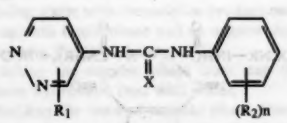
Filed May 30, 1980, Ser. No. 154,664

Claims priority, application Japan, May 31, 1979, 54-67872

Int. Cl.³ C07D *237/22, 237/20, 237/24;* A01N *47/36*

U.S. Cl. 544—224 **4 Claims**

1. Compounds of formula:



wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a halogen atom, a lower alkoxy group, an aryloxy group, a halomethyl group, a cyano group, an alkylthio group, a carboxy group or an alkoxycarbonyl group; X represents an oxygen atom; and n represents 1, 2 or 3; when n represents 2 or 3, R_2 each may be different.

4,331,808

CHEMILUMINESCENT NAPHTHALENE-1,2-DICARBOXYLIC ACID HYDRAZIDE-LABELED HAPTENS

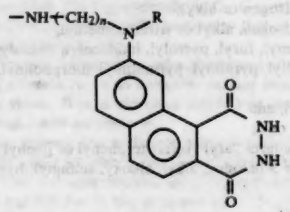
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,286, Jul. 24, 1978, Pat. No. 4,225,485. This application Oct. 5, 1979, Ser. No. 82,109
Int. Cl.³ C07D *237/26*; G01N *33/54, 33/58, 33/78*
U.S. Cl. 544—234 7 Claims

1. A chemiluminescent-labeled conjugate for use in specific binding assays of the general formula:

L(CO—NH)labeling substance

wherein L(CO— is a hapten of molecular weight greater than 100 bound to said labeling substance through an amide bond, characterized in that said —NH)labeling substance has the formula:



wherein R is hydrogen or straight chain alkyl containing 1–4 carbon atoms and n=2–6.

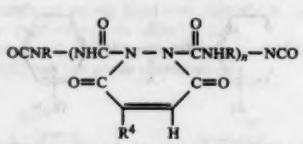
4,331,809

CARBAMYLBIURET-MODIFIED POLYISOCYANATES

Donald L. Christman, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 92,479, Nov. 8, 1979, Pat. No. 4,271,087. This application Dec. 22, 1980, Ser. No. 220,592
Int. Cl.³ C07D *237/16*
U.S. Cl. 544—238 6 Claims

1. A carbamylbiuret-modified polyisocyanate of the formula:



wherein n is an integer of from about 1 to about 20; R is a divalent hydrocarbon radical containing from about 1 to about 18 carbon atoms; and R^4 is selected from the group consisting of hydrogen, alkyl containing from about 1 to about 6 carbon atoms, cycloalkyl containing from about 3 to about 7 carbon atoms, phenyl and benzyl.

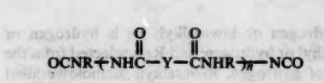
4,331,810

CARBAMYLBIURET-MODIFIED POLYISOCYANATES

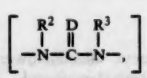
Donald L. Christman, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

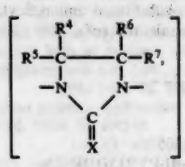
Continuation-in-part of Ser. No. 92,479, Nov. 8, 1979, Pat. No. 4,271,087. This application Dec. 29, 1980, Ser. No. 220,593
Int. Cl.³ C07D *239/60, 239/55, 239/56, 239/58*
U.S. Cl. 544—296 7 Claims

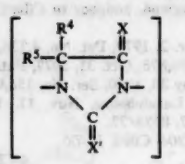
1. A carbamylbiuret-modified polyisocyanate of the formula:

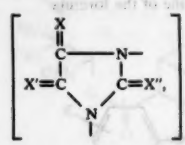


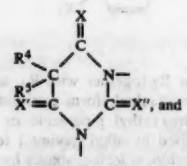
wherein n is an integer of from about 1 to about 20; R is a divalent hydrocarbon radical containing from about 1 to about 18 carbon atoms; and Y is the divalent radical selected from the group consisting of

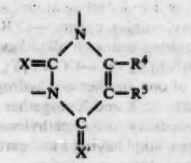
(a)


(b)


(c)


(d)


(a)


(b)


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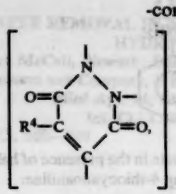


(g)

wherein X, X', and X'' are independently selected from the group consisting of oxygen and sulfur; R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, alkyl containing from about 1 to about 6 carbon atoms, cycloalkyl containing from about 3 to about 7 carbon atoms, phenyl, and benzyl.

4,331,811

PREPARATION OF 2,3-DICHLORO-5-TRICHLOROMETHYLPYRIDINE

John A. Werner, Antioch; Charles A. Wilson, Pittsburg, both of Calif., and Craig E. Mixan, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 12, 1981, Ser. No. 243,166

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **4 Claims**

1. In a process for making 2,3-dichloro-5-trichloromethylpyridine by contacting 2-chloro-5-trichloromethylpyridine with chlorine in the presence of a catalyst at a temperature of 70° to 250° C., the improvement comprising employing a catalyst selected from the group consisting of tungsten hexacarbonyl or molybdenum hexacarbonyl.

4,331,812

TREATMENT OF DIBASIC ESTERS WITH ALKALI METAL METHYLATES

Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1980, Ser. No. 202,250

Int. Cl.³ C07C *67/56*

U.S. Cl. 560—191 **2 Claims**

1. A method of reducing the color-forming tendency of methyl esters obtained from alkanedioic acids having 4–12 carbon atoms produced by the nitric acid oxidation of cycloaliphatic hydrocarbons selected from the class consisting of ketones, alcohols and mixtures of the foregoing which method consists of contacting said esters with an alkali metal methylate and thereafter recovering the thus treated esters.

4,331,813

PROCESS FOR MAKING ESTERS OF UNSATURATED ACIDS

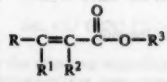
Chelliah Daniel, and Phillis L. Brusky, both of Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 9, 1981, Ser. No. 232,605

Int. Cl.³ C07C *67/08, 67/317*

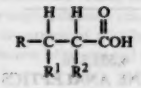
U.S. Cl. 560—205 **25 Claims**

1. A process for forming alkyl α-β unsaturated esters of general formula I



(I)

wherein R, R^1 and R^2 are different or the same and are selected from hydrogen, methyl and ethyl; and R^3 is an alkyl of up to ten (10) carbon atoms, which comprises contacting an oxydehydrogenation-esterification catalyst having sites for oxydehydrogenation of the α-β hydrogen atoms of the saturated acid and for esterification with a feed mixture comprised of a saturated acid of general formula II



(II)

wherein R, R^1 and R^2 are different or the same and are as defined, an alcohol of general formula R^3—OH wherein R^3 is as defined, and oxygen, for a time sufficient to form an ester of general formula I.

4,331,814

SULPHONES HAVING A 1,5-DIMETHYL-HEXA-1,5-DIENYLENE GROUP

Pierre Chabardes, Lyons; Marc Julia, Paris, and Albert Menet, La Mulatiere, all of France, assignors to Rhone Poulenc S.A., France

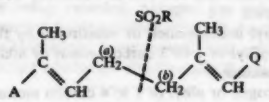
Filed Feb. 1, 1973, Ser. No. 328,537

Claims priority, application France, Feb. 2, 1972, 72.03482; Apr. 10, 1972, 72.12477

Int. Cl.³ C07C *175/00*

U.S. Cl. 560—255 **7 Claims**

1. A sulphone of the formula:



in which A represents 2-(2,6,6-trimethylcyclohex-1-enyl)-ethenyl, R represents an alkyl, aralkyl or aryl radical in which the said aryl is unsubstituted or substituted by chlorine or alkyl, and the group —SO_2R replaces a hydrogen atom on carbon atom (a) or (b) and Q is an etherified primary alcohol group —CH_2OH or the primary alcohol group —CH_2OH or a free aldehyde group, or the group —SO_2R replaces a hydrogen atom on carbon atom (a) and Q is an esterified primary alcohol group —CH_2OH.

4,331,815

PROCESS FOR MANUFACTURING N-BENZYL-N-ISOPROPYL AMIDES

Roger P. Cahoy, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 26, 1980, Ser. No. 191,809

Int. Cl.³ C07C *103/34, 103/76*

U.S. Cl. 564—142 **8 Claims**

1. The process for manufacturing N-benzyl-N-isopropyl carboxamides comprising the steps:

(a) Reacting two molar equivalents of benzylisopropylamine with each mole of carboxylic acid chloride in a non-reactive organic solvent medium at a temperature within the range of 5° to 100° C.;

(b) Mixing water with the reaction product mixture to obtain an aqueous liquid phase and an organic liquid phase and separating the two phases;

(c) washing the organic phase from step (b) with dilute sodium hydroxide, then with water;

(d) Distilling the washed organic phase, thereby removing water and non-reactive organic solvent, to yield the N-benzyl-N-isopropyl amide as distillation residue;

(e) Reacting the aqueous phase from step (b) with aqueous sodium hydroxide to yield a mixture consisting of an aqueous liquid phase and a liquid organic phase of lower specific gravity which consists essentially of benzylisopropylamine, and

(f) Separating and recycling the benzylisopropylamine phase from step (e) to step (a).

4,331,816

ANILINE ANALEPTICS

Michael S. Hadley, Sawbridgeworth, England, assignor to Beecham Group Limited, England

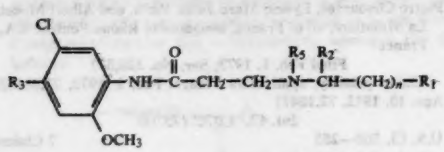
Division of Ser. No. 894,942, Apr. 10, 1978, Pat. No. 4,223,034. This application May 12, 1980, Ser. No. 148,778

Claims priority, application United Kingdom, Apr. 22, 1977, 16765/77

Int. Cl.³ C07C *103/75, 103/82, 125/06*

U.S. Cl. 564—164 **25 Claims**

1. A compound of the formula:

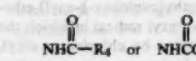


and the N-oxides and the pharmaceutically acceptable salts thereof wherein

R_1 is phenyl unsubstituted or substituted by fluoro chloro, bromo, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms;

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydrogen, nitro, amino,



in which R_4 is alkyl of 1 to 4 carbon atoms unsubstituted or substituted with up to three chlorine atoms or with three fluorine atoms on the same carbon atoms;

R_5 is alkyl of 1 to 4 carbon atoms

n has a value of 0, 1 or 2.

4,331,817

PROCESS FOR THE PREPARATION OF 4-ARYLTHIOANILINES

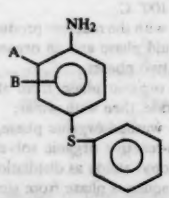
James R. Throckmorton, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed Jan. 16, 1981, Ser. No. 225,739

Int. Cl.³ C07C *85/00, 85/24*

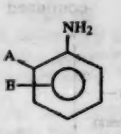
U.S. Cl. 564—430 **6 Claims**

1. A process for the preparation of 4-arylthioanilines of the formula

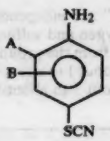


wherein A is halogen or trifluoromethyl and B is hydrogen or halogen which comprises

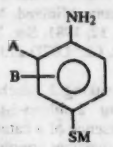
(1) reacting a substituted aniline of the formula



with an alkali metal thiocyanate in the presence of halogen to provide the corresponding 4-thiocyanoaniline:

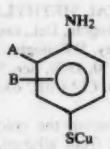


(2) mixing a solution of that compound in a solvent with a concentrated aqueous alkali metal sulfide solution to form the corresponding alkali metal mercaptide



wherein M is an alkali metal atom;

(3) heating the reaction mixture containing the alkali metal mercaptide with cuprous oxide to form the cuprous mercaptide salt



in situ; and

(4) treating the heated reaction mixture with an aryl halide to form the desired product.

4,331,818

CHIRAL PHOSPINE LIGAND

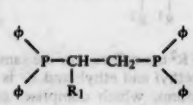
Dennis P. Riley, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 19, 1980, Ser. No. 132,475

Int. Cl.³ C07F *9/50*

U.S. Cl. 568—17 **3 Claims**

1. A compound of the formula

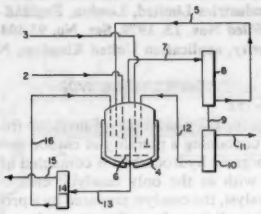


wherein R_1 is cyclohexyl.

4,331,819
WATER REMOVAL IN NITRATION OF AROMATIC HYDROCARBONS

Robert McCall, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 24, 1980, Ser. No. 143,372
Int. Cl.³ C07C 76/02, 79/10
U.S. Cl. 568—939 4 Claims



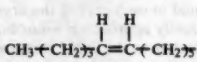
1. In the continuous process of nitrating an aromatic hydrocarbon in which the hydrocarbon, preformed nitric acid and 60–70% sulfuric acid are brought together to form a reaction mass, the improvement comprising removing enough water from the reaction mass to maintain the sulfuric acid strength at about 60–70% by bringing the mass into intimate contact with a gas, inert to the nitration reaction and capable of being humidified under the reaction conditions, thus humidifying the gas, and then removing the gas from the reaction zone.

4,331,820
CIS-6-UNDECENE-1-CHLORIDE AND A METHOD FOR THE PREPARATION THEREOF

Kenichi Taguchi; Akira Yamamoto; Toshinobu Ishihara; Nobuo Takasaka, and Hisashi Shimizu, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 222,982
Claims priority, application Japan, Jan. 14, 1980, 55-2986
Int. Cl.³ C07C 17/26, 21/04
U.S. Cl. 570—189 4 Claims

1. Cis-6-undecene-1-chloride expressed by the structural formula



4,331,821
PROCESS FOR THE MONOHALOGENATION OF ALKYLBENZENES IN THE α-POSITION AND NEW ALKYLBENZENES MONOHALOGENATED IN THE α-POSITION

Rüdiger Schubart, Bergisch-Gladbach; Erich Klauke, Odenthal; Klaus Naumann, Cologne, and Rainer Fuchs, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 78,991, Sep. 26, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,765
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844270
Int. Cl.³ C07C 17/14
U.S. Cl. 570—196 11 Claims

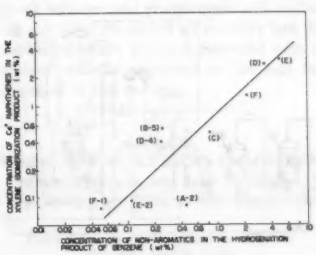
1. A process for the selective monohalogenation of an alkylbenzene in the alpha-position comprising continuously contacting a stoichiometric excess of an alkylbenzene having at least one hydrogen atom in the alpha-position with a halogen at a temperature in the range of about 80° C. up to the boiling point of the alkylbenzene while applying UV radiation thereto, while continuously withdrawing reaction mixture containing no more than about 33 mol percent of halogenoalkylbenzene product, based upon the number of mols of all of the substances contained in the reaction mixture, said alkylbenzene being vaporized from a collection vessel, the vapors being caused to flow upwardly through a defined reaction zone into a condensation zone, the so-vaporized alkylbenzene being condensed and liquid alkylbenzene being caused to flow downwardly into

said defined reaction zone and toward said collection zone, the passage of said liquid alkylbenzene downwardly through said reaction zone being retarded, halogen gas being directed against the retarded liquid alkylbenzene and the thus formed halogenated alkylbenzene being passed into said collection vessel by directing condensed alkylbenzene thereagainst.

4,331,822
ISOMERIZATION OF XYLENE

Tamio Onodera; Tokuji Sakai; Yasuo Yamasaki, and Koji Sumitani, all of Matsuyama, Japan, assignors to Teijin Petrochemical Industries Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,793
Claims priority, application Japan, Mar. 29, 1979, 54-36269
Int. Cl.³ C07C 5/22
U.S. Cl. 585—482 12 Claims



1. In a process for isomerizing xylenes and selectively dethylating ethyl benzene contained in an aromatic hydrocarbon stock comprising mainly xylene isomers not attaining a thermodynamic equilibrium composition and ethyl benzene, which process comprises contacting said hydrocarbon stock with a catalyst composition containing a crystalline aluminosilicate at an elevated temperature in the vapor phase in the presence of hydrogen, the improvement wherein said catalyst composition comprises a crystalline aluminosilicate selected from the group consisting of zeolite ZSM-5, zeolite ZSM-11, zeolite ZSM-12, zeolite ZSM-35 and zeolite ZSM-38 having a silica/alumina mole ratio of at least 10, and containing at least two metals which are (a) platinum and (b) at least one metal selected from the group consisting of titanium, chromium, zinc, gallium, germanium, strontium, yttrium, zirconium, mo-

lybdenum, palladium, tin, barium, cerium, tungsten, osmium, lead, cadmium, mercury, indium, lanthanum and beryllium.

4,331,823

CATALYST, PREPARATION THEREOF AND USE THEREOF IN THE PREPARATION OF TELOMERIC POLYBUTADIENE HOMO- OR CO-POLYMERS

Wolfgang Wieder, Leverkusen, and Josef Witte, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 120,626, Feb. 11, 1980. This application May 6, 1981, Ser. No. 261,009

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905763

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—507 3 Claims

1. A process for preparing telomeric polybutadiene homopolymer or copolymer which comprises reacting the monomers of said polymer in the presence of a catalytic amount of a catalyst comprising the reaction product of

(a) an organometallic compound of the formula RMe wherein R is a saturated aliphatic or aromatic hydrocarbon radical having from 2 to 8 carbon atoms and Me is alkali metal;

(b) a compound of the formula R'OMe' wherein R' is a saturated aliphatic or aromatic hydrocarbon radical having from 2 to 8 carbon atoms and Me' is alkali metal and

(c) pentamethyldiethylenetriamine, the molar ratio of (a) to (b) is from 0.1:1 to 50:1 and the molar ratio of (a) to (c) being from 0.1:1 to 10:1.

4,331,824

PROCESS FOR PREPARATION OF HIGH PURITY ISOBUTYLENE

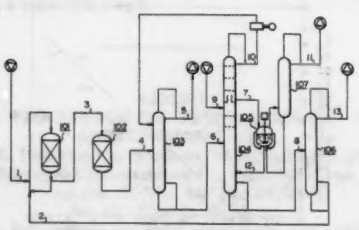
Minoru Ikeda, Hiroshima; Teruhiko Yoshioka, and Kazutaka Inoue, both of Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,681

Claims priority, application Japan, Jul. 16, 1979, 54-90036

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—638 7 Claims



1. A process for the preparation of high purity isobutylene comprising treating a mixture of tertiary butyl alcohol and a tertiary butyl ester of an aliphatic carboxylic acid having 1 to 6 carbon atoms in the presence of an acidic ion exchanger and separating isobutylene in a highly purified form by distillation.

4,331,825

PRODUCTION OF METHANE BY HYDROGENOLYSIS OF HYDROCARBONS AND RUTHENIUM CATALYSTS THEREFOR

Robin Whyman, Christleton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 13, 1979, Ser. No. 93,494

Claims priority, application United Kingdom, Nov. 16, 1978, 44764/78

Int. Cl.³ C07C *4/02*

U.S. Cl. 585—752 17 Claims

1. A process for the production of methane from an organic hydrocarbon containing a plurality of carbon atoms, a process wherein the organic hydrocarbon is contacted in the presence of hydrogen with as the only catalytic entity, a supported ruthenium catalyst, the catalyst prepared by a process comprising the decarbonylation of a ruthenium carbonyl compound.

4,331,826

PROCESS FOR SEPARATING P-XYLENE FROM A HYDROCARBON MIXTURE

Saburo Kagawa, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Mar. 16, 1981, Ser. No. 244,479

Claims priority, application Japan, Mar. 17, 1980, 55-32727

Int. Cl.³ C07C *7/14*

U.S. Cl. 585—812 7 Claims

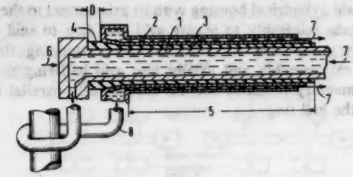
1. A process for separating p-xylene from a p-xylene containing hydrocarbon liquid feed material by crystallization, said process comprising (1) mixing a p-xylene containing hydrocarbon feed material with an inert liquid refrigerant, (2) feeding the mixed liquid into a lower part of a bubble tower type crystallization tower as an ascending current, (3) evaporating the refrigerant by the lowering of the liquid static pressure caused by ascent of the mixed liquid and by the transfer of heat into the refrigerant due to solidification of p-xylene and by the lowering of the temperature of the mixed liquid, cooling the ascending liquid to form a slurry of p-xylene crystals in the hydrocarbon liquid, wherein the ascending liquid is continuously cooled by feeding the mixture of the hydrocarbon liquid feed material and the liquid refrigerant so that the temperature of the ascending liquid in each part of the crystallization zone is decreased to gradually approach a vapor-liquid equilibrium temperature of the system to the liquid pressure on each height level of the crystallization zone, thereby promoting growth of p-xylene crystals by maintaining a supercooled state during the crystallization step, while maintaining the crystallization zone at a temperature higher than the temperature at which an eutectic mixture is formed, maintaining a mixed phase stream composed substantially of the hydrocarbon material-p-xylene crystal slurry, the inert liquid refrigerant, and the vapor of the inert refrigerant as the ascending current, (4) separating the inert refrigerant as a vapor from the liquid surface of the upper part of the crystallization zone, and (5) separating p-xylene crystals from the slurry discharged from the upper part of the crystallization zone.

4,331,827

METHOD OF PRODUCING CURRENT LEAD-INS HAVING COAXIAL CONSTRUCTION

Wolfgang Keller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,142
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823611
Int. Cl.³ B01J *17/08;* H05B *5/08*
U.S. Cl. 373—139 6 Claims



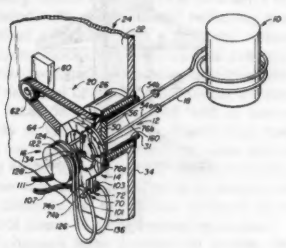
4. Current lead-ins having a coaxial construction comprising coaxial inner and outer conductor tubes said outer tube having an outwardly flaring conical end portion and, intermediate said tubes, a silicone rubber layer formed with a resilient outwardly flaring conical portion at least at an end thereof surrounding said flaring conical end portion of said outer tube and forming therewith a seal and a stop against the outside.

4,331,828

APPARATUS FOR MOUNTING A CRUCIBLE WITHIN AN ELECTRIC FURNACE

Max P. Schlienger, Ukiah, Calif., assignor to Retech, Inc., Ukiah, Calif.

Filed Jan. 29, 1981, Ser. No. 229,429
Int. Cl.³ H05B *5/00*
U.S. Cl. 373—153 27 Claims



1. An electric furnace which receives power from a remote electric power source and which receives cooling water from a remote water source, said furnace comprising:

an enclosure;

a support assembly rotatably mounted in the enclosure;

an electric heating element which may be a water cooled induction coil or a resistance heater mounted on the support assembly;

means for electrically coupling the heating element with the power source, said means for coupling having a first portion which is connected with the support assembly for rotation therewith and a second portion which is fixed with respect to the enclosure and in sliding electrical contact with said first portion to define a current path therebetween, said first portion being symetrically formed with respect to its axis of rotation so that rotation of said first portion does not substantially affect the inductive load of the furnace;

means for supplying cooling water from the remote water source to the electric heating element, said means for supplying water having a first portion which is rotatably connected with the support assembly for rotation therewith and a second portion which is fixed with respect to the enclosure; and

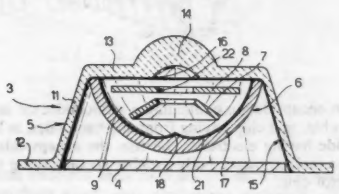
means for rotating the support assembly with respect to the enclosure, the first portion of the means for coupling, and the first portion of the means for supplying cooling water so that said support assembly, first portion of the means for coupling electricity, and first portion of the means for supplying cooling water remain in a fixed spatial relationship to one another regardless of the degree of rotation of the support assembly.

4,331,829

THERMOPHOTOVOLTAIC CONVERTER

Mario Palazzetti, Avigliana; Angioletta Boero, Turin; Francesca Demichelis, Turin; Enrica Minetti-Mezetti, Turin, and Giancarlo Ferrari, Turin, all of Italy, assignors to Centro Ricerche Fiat S.p.A. and Politecnico di Torino, both of Turin, Italy

Filed Oct. 3, 1980, Ser. No. 193,595
Claims priority, application Italy, Oct. 5, 1979, 68929 A/79
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—253 13 Claims



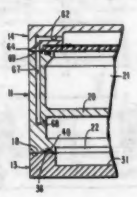
1. A thermophotovoltaic converter comprising a transducer of solar radiation provided with at least one lens; and at least one photovoltaic cell; characterized in that said transducer comprises at least one radiator having an irradiating surface substantially facing a sensitive surface of said photovoltaic cell turned towards the interior of said transducer, a selective filter being disposed between said photovoltaic cell and said radiator, wherein said filter comprises an auxiliary lens of substantially hemispherical shape which is provided with a layer of optical selective material deposited on the side facing said irradiating surface of said radiator.

4,331,830

HOUSING FOR ELECTRICAL COMPONENTS

Harry E. Conway, Baltimore, and John W. Hughes, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 19, 1980, Ser. No. 188,639
Int. Cl.³ H05K *7/20*
U.S. Cl. 174—16 R 12 Claims



1. A heat dissipating container for electrical components, comprising a metallic shell having a pair of chambers therein, one of said chambers for holding a liquid dielectric and another

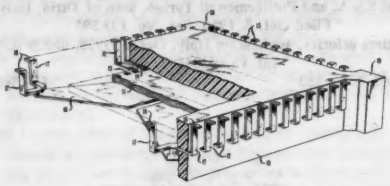
chamber for holding a gaseous dielectric, a flexible bladder member mounted in the container and positioned such that one surface of the bladder forms at least a portion of one of the walls of the liquid dielectric chamber and having a portion of the bladder spaced from the metallic shell to form a recess that is sealed from the liquid dielectric chamber, and means to direct the flow of gas between the recess and the gas dielectric chamber.

4,331,831

PACKAGE FOR SEMICONDUCTOR INTEGRATED CIRCUITS

Arthur J. Ingram, and Irving Weingrod, both of Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 28, 1980, Ser. No. 210,776
Int. Cl.³ H05K 1/06
U.S. Cl. 174—52 FP **3 Claims**



1. An encapsulation containing a semiconductor integrated circuit chip, said chip having front and back sides, at least said front side having electrodes thereon, the encapsulation comprising a molded plastic body member encompassing the semiconductor chip,

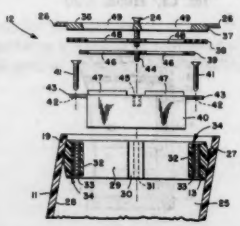
characterized in that the encapsulation includes unitary lead members for providing interconnection between electrodes on the chip and terminals external to the encapsulation, a first group of said lead members each having a termination internal to the encapsulation in contact with electrodes on the front side of the chip, a second group of said lead members, separate from said first group, which have terminations internal to the encapsulation comprising not more than four large area tab members, each of which contacts about 20 percent of the backside of said chip.

4,331,832

ELECTRICAL OUTLET BOX

John S. Curtis, Mayfield Heights, Ohio, and Albert Hurst, New Smyrna Beach, Fla., assignors to Sedco Pipe Products, Inc., Cleveland, Ohio

Filed Jan. 10, 1980, Ser. No. 111,035
Int. Cl.³ H02G 3/12
U.S. Cl. 174—57 **8 Claims**



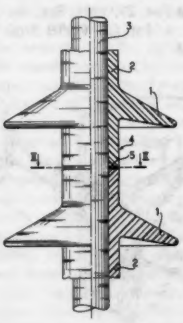
1. An electrical outlet floor box comprising an open top vertically extending circular cylindrical plastic housing adapted to be cut off substantially flush with or slightly above and parallel with a floor surface, a cover assembly including a cover of a larger diameter than the inside diameter of said cylindrical housing and adapted to be positioned flush against the top of said cylindrical housing after said cylindrical housing has been cut off, a plastic ball ring having a generally spherical outside surface, the largest diameter of which is substantially the same as the inside diameter of said cylindrically housing, and means releasably to secure said ball ring to the underside of said cover assembly in proper position whereby the ball ring may be positioned inside the top of the cylindrical housing and held in place for solvent cementing with the cover serving as a jig to hold the ball ring within the top of said cylindrical housing with its axis normal to the floor, said means releasably to secure said ball ring to said cover assembly comprising threaded fasteners extending through said cover assembly and axially into said ball ring through complementary threaded sockets substantially parallel to the axis of the ball ring.

4,331,833

INSULATOR COMPRISING A PLURALITY OF VULCANIZED FINS AND METHOD OF MANUFACTURE

Laurent Pargamin, and Denis Thuillier, both of Vichy, France, assignors to Societe Anonyme dite: CERAVER, Paris, France

Filed Jul. 10, 1980, Ser. No. 168,232
Claims priority, application France, Jul. 11, 1979, 79 18031
Int. Cl.³ H01B 3/28, 17/58, 17/66
U.S. Cl. 174—179 **8 Claims**



7. An insulator formed by:

vulcanising fin units made of elastomer material, each fin unit comprising a sleeve bearing a bore, two end faces, and at least one fin projecting generally outwardly from said sleeve;

assembling the fin units in end-to-end relationship with their bores in alignment and with a washer of raw elastomer material extending over an area in excess of the area of the end faces of said sleeves with the washer held between adjacent pairs of sleeve end faces and with excess sheet material projecting outwardly from the sleeve end faces;

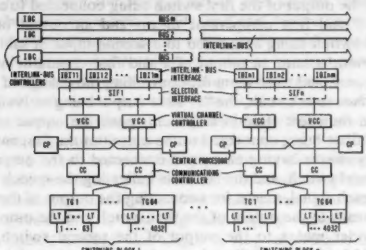
vulcanising the washers in situ to form a single multi-fin insulator of increased dielectric strength; and

removing the excess sheet material after vulcanisation of the washers such that the remaining portions of said washers are flush with the sleeve portions of the fins to eliminate ingress of moisture at the joint and resultant arcing during insulator use at said joint, while providing electrical insulation continuity throughout the length of the insulator.

4,331,834
MODULAR TELECOMMUNICATION SYSTEM

Manfred Ganz, Munich, Fed. Rep. of Germany; Enrique Gueldner, Cinnaminson, N.J., and Dieter Burgermeister, Wolfratshausen, Fed. Rep. of Germany, assignors to Siemens Corporation, Iselin, N.J.

Filed Oct. 29, 1980, Ser. No. 199,201
Int. Cl.³ H04Q *3/60*; H04L *15/00*
U.S. Cl. 178—3 **13 Claims**



1. In a modular telecommunication system for exchanging data between any pair of a multiplicity of data terminals, said telecommunication system including a plurality of switching blocks and a plurality of interconnecting lines for interconnecting said switching blocks, each particular switching block adapted to be connected to a respective group of data terminals and having:

(a) line terminators adapted to be connected to a respective data terminal of the associated group of data terminals;

(b) means connected to said line terminators for controlling local data transfer across real channels from and to said line terminators;

(c) an interface unit connected to said interconnecting lines for providing remote data exchange between a data terminal associated with said particular switching block and a data terminal associated with a different, remote one of said switching blocks, the improvement comprising:

each particular switching block being provided with a multiplicity of said real channels, determining communication links for local data transfer and with a corresponding multiplicity of virtual channels determining communication links for remote data transfer between said particular switching block and one of said remote switching blocks across inter-connecting lines, wherein connections across said real channels and said virtual channels are set up by said control means in a corresponding manner;

said virtual channels being arranged in groups, each group being statically associated with a respective one of said remote switching blocks; and

said virtual channels of each of said groups being assigned in a cyclic order to consecutive interconnecting lines.

4,331,835
INTERFACE UNIT FOR A MODULAR TELECOMMUNICATION SYSTEM

Enrique Gueldner, Cinnamonson, and James M. Major, Nabford, both of N.J., assignors to Siemens Corporation, Iselin, N.J.

Filed Oct. 29, 1980, Ser. No. 199,204
Int. Cl.³ H04Q *3/60*; H04L *15/00*
U.S. Cl. 178—3 **11 Claims**

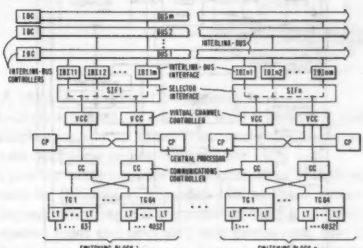
1. In a modular telecommunication system for exchanging data between any pair of a multiplicity of data terminals, said telecommunication system including a plurality of switching blocks and a plurality of interconnecting lines for interconnecting said switching blocks, each of said switching blocks adapted to be connected to a respective group of data terminals and having:

(a) line terminators each adapted to be connected to a respective one of said data terminals;

(b) means connected to said line terminators for controlling local data transfer across real channels from and to said line terminators;

(c) an interface unit connected to said interconnecting lines for providing remote data transfer from and to a data terminal associated with a different remote one of said switching blocks, the improvement comprising:

(1) said interconnecting lines including a plurality of individually controlled interlink buses, each being coupled to each of said switching blocks in such a manner that each switching block simultaneously gains access to a respective interlink bus in a time-multiplex mode for transmitting data to a different remote one of said switching blocks across virtual channels;



(2) said interface units each associated with a respective switching block, and constituting a plurality of interlink-bus interface units for buffering information received from an interlink bus, each interlink-bus interface unit having first parallel inputs and outputs each directly connected to a respective one of said interlink buses, and having second parallel inputs and outputs; and

(3) a plurality of short distance transmission lines each being associated with one of said interlink-bus interface units and each including a multiplicity of parallel lines each connected to a respective one of said second inputs and outputs, on the one hand, and to said switching block associated therewith, on the other hand, for transmitting data and control signals in parallel.

4,331,836
SPEECH SYNTHESIS INTEGRATED CIRCUIT DEVICE

Richard H. Wiggins, Jr., Dallas, and George L. Brantingham, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 901,393, Apr. 28, 1978, Pat. No. 4,209,836, which is a continuation-in-part of Ser. No. 807,461, Jun. 17, 1977, abandoned. This application Nov. 16, 1979, Ser. No. 95,180
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **29 Claims**

1. A system for generating synthetic human speech comprising:

(a) first memory means for storing a plurality of digital speech values including digital speech values representative of digital filter coefficients;

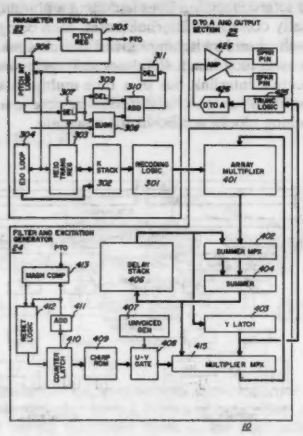
(b) second memory means for storing digital data including at least one selected address location of said first memory means;

(c) controller means coupled to said first and second memory means for accessing selected portions of said plurality of digital speech values including said digital speech values representative of digital filter coefficients in said first memory means in response to said selected address location in said second memory means;

(d) digital filter speech synthesis means coupled to said controller means comprising:

(i) an excitation generator for generating excitation signals;

(ii) a single multiplier circuit coupled to said first memory means and to said excitation generator and having a selective feedback multiplex network interconnecting the output and the input thereof in a closed feedback loop for selectively multiplying said excitation signals



with said accessed digital speech values representative of digital filter coefficients in a multiplexing multiply operation; and

(iii) digital-to-analog converter means for converting the output of said single multiplier circuit to analog signals representative of human speech; and

(e) audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sounds.

4,331,837

SPEECH/SILENCE DISCRIMINATOR FOR SPEECH INTERPOLATION

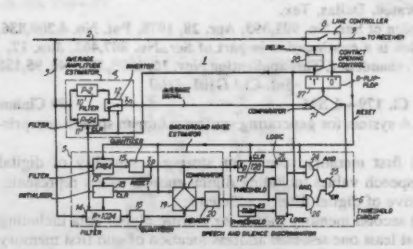
Joël Soumagne, 2560 rue Troyes, Sherbrooke, Quebec, Canada (J1K 2R1)

Filed Feb. 28, 1980, Ser. No. 125,532

Claims priority, application France, Mar. 12, 1979, 79 06670

Int. Cl.³ H04J *6/02*

U.S. Cl. 179—1 SC **5 Claims**



1. A speech/silence discriminator comprising first filter means with a very wide band and having an input connected to an input of means of said discriminator and an output connected to a first input of a switch, second and narrow band filter means having an input connected to the input of a discriminator and having an output connected to a second input of the said switch; said narrow band second filter comprising one zero resetting input connected to respond to a "1" output of a two state circuit, a first quantization circuit means, divider means, third filter means with variable bandwidth having an input connected to the input of the discriminator and an output connected to an input of said first quantization circuit means the output of which is connected to the input of said divider means having an output connected to an input of a second switch, said second switch having another input connected to the "0" output of the said two state circuit, first comparator means, the output of the first switch being connected to a first input of said first comparator means and an output of the second switch being connected to a second input of said first comparator means, an output of a said first coparator means being connected to an input for controlling the change of state of said two state circuit, the "1" state output being activated to indicate the silent state in a speech signal, the output of the second filter being connected to the output of the first switch, memory means having an output connected to the output of the second switch, and the "0" state indicating the speech state in a speech signal, means for connecting the output of the first filter means to the output of the first switch and the output of the divider means to the output of the second switch, the bandwidth of the third filter decreasing as a function of time to a minimal bandwidth after it is set to a maximum bandwidth responsive to each activation of the "0" output state.

4,331,838

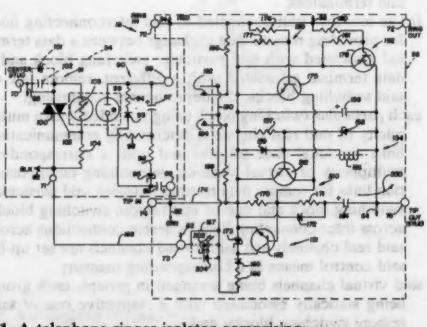
TELEPHONE RINGER ISOLATOR CIRCUIT ARRANGEMENT

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,137

Int. Cl.³ H04M *3/02, 13/00*

U.S. Cl. 179—17 E **5 Claims**



1. A telephone ringer isolator comprising:

(a) first and second terminals adapted to be DC coupled to the tip and ring conductors of a subscriber's line connecting a subscriber's telephone to a central office to provide for the application of the central office battery and Ac ringing signal voltages across said terminals;

(b) a first capacitor having two terminals, the first capacitor terminal being connected to said first ringer isolator terminal;

(c) a diode having an anode and a cathode electrode and a first resistor connected in series therewith, said diode anode electrode being coupled to the second terminal of said first capacitor, said first resistor being coupled to said second ringer isolator terminal;

(d) a zener diode having anode and cathode electrodes, said zener diode cathode being coupled to said second terminal of said first capacitor, a second resistor and a second capacitor being serially connected, said second resistor being connected to said zener diode anode electrode and said second capacitor being connected to said second

ringer isolator terminal; said zener diode and said diode alternately rectifying said AC ringing voltage from said central office to supply a current to charge said second capacitor to a DC voltage that is approximately twice the peak voltage of said AC ringing voltage;

(e) a current conducting light-emitting device and a third resistor connected in series, said light-emitting device and said third resistor being connected across said second capacitor in a discharge path for said capacitor, said device being in a non-conducting state in which it emits no light when the voltage across said second capacitor is below a preselected value, and said device being responsive to an increase in the voltage across said second capacitor above said preselected value to conduct current and to emit light upon conducting current; and

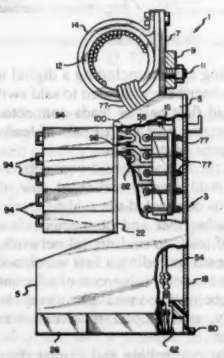
(f) circuit means under the control of said device for maintaining the ringer in said telephone disconnected from earth ground in absence of light emitted by said device, said circuit means being responsive to the light emitted by said device to complete a current conducting circuit that connects said ringer between said ground and one of said conductors for enabling said ringing signal to be conducted through said ringer to ring said ringer, the zener potential of said zener diode being greater than said preselected value and greater than the voltage applied across said first and second ringer isolator terminals during the ringing signal alternations.

4,331,839

TELEPHONE DISTRIBUTION FRAME CONNECTOR ASSEMBLY

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Dec. 12, 1980, Ser. No. 215,742
Int. Cl.³ H04Q *1/14*
U.S. Cl. 179—98 **17 Claims**



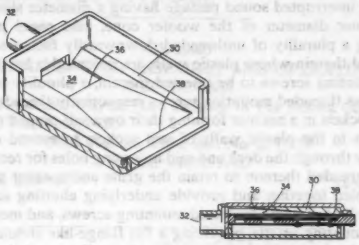
11. A telephone distribution frame connector assembly comprising a plurality of circuit boards having printed circuit wiring thereon; said boards having means forming a first region for terminating incoming telephone lines, and means forming a second region for terminating inside equipment lines, said printed circuit wiring being in line circuits running between the incoming lines and the inside equipment, a series of ground busses, said circuit boards having a series of slots that receive said ground busses, and means for maintaining the circuit boards in predetermined relationship; said last-named means including a structure having means supporting corresponding edges of said circuit boards and also having openings for receiving terminals of overvoltage protector devices for said lines.

4,331,840

ELECTRET TRANSDUCER WITH TAPERED ACOUSTIC CHAMBER

Preston V. Murphy, and Kurt Hübschi, both of Geneva, Switzerland, assignors to Lectret S.A., Geneva, Switzerland

Filed Feb. 22, 1980, Ser. No. 123,718
Int. Cl.³ H04R *19/04*
U.S. Cl. 179—111 E **1 Claim**



1. A electret transducer comprising

a backplate coated on one face with a dielectric material,

a diaphragm spaced apart from and positioned parallel to said backplate and facing said one face,

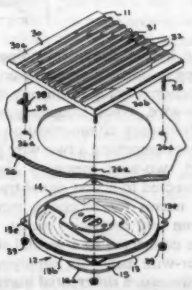
a frame for carrying said backplate and said diaphragm, and means for defining an acoustic chamber, said means including said diaphragm and a member having an inner surface spaced from and opposing said diaphragm, said chamber having an opening thereto located at a chamber boundary non-parallel with said diaphragm and located near one side edge of said diaphragm, the height of said chamber defined by said inner surface and said diaphragm diminshing substantially continuously from near said opening to zero height at an opposite side of said diaphragm, the average width of said inner surface increasing substantially continuously from near said opening to said opposite side.

4,331,841

GRILLE COVERED SPEAKER MOUNTING ASSEMBLY FOR AUTOMOBILE DECKS AND THE LIKE

John F. Castagna, Brooklyn, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.

Filed Jul. 30, 1980, Ser. No. 174,191
Int. Cl.³ H04R *1/02*
U.S. Cl. 179—146 E **14 Claims**



1. A deck mount type speaker assembly for installation on a generally horizontal automobile deck and the like with the speaker assembly facing upwardly on the automobile deck, comprising a main speaker section including a speaker basket frame having an outer generally annular rim portion to be supported from the deck and having mounting holes for re-

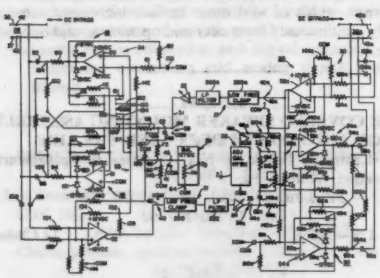
ceiving fasteners to fix the main speaker section against the underside of the automobile deck, the main speaker section including a woofer speaker unit comprising a speaker magnet and pole structure supported rigidly from the basket frame and a deformable woofer cone peripherally supported from said rim portion, a grille panel of unitary plastic material to be disposed in overlying abutment on the automobile deck including a generally flat panel portion having a plurality of sound transmitting openings therethrough disposed in an array forming an interrupted sound passage having a diameter similar to the inner diameter of the woofer cone, said panel portion having a plurality of unthreaded downwardly facing sockets molded therein whose plastic walls are deformable by threads of mounting screws to be inserted therein, a plurality of long headless threaded mounting screws respectively threaded into said sockets in a manner forming their own self-tapped mating threads in the plastic walls of said sockets to extend downwardly through the deck and said mounting holes for receiving nuts threaded thereon to retain the grille and speaker section assembled together and provide underlying abutting support for the basket frame from said mounting screws, and means on said mounting screws providing a flat flange-like shoulder on each of said screws and located a short distance below the upper ends of said screws in abutment against said grille between the grille and said deck to transfer the weight load of the speaker section on said screws to said deck and relieve the grille of such speaker weight load.

4,331,842

VOICE FREQUENCY REPEATER AND TERM SETS AND OTHER CIRCUITS THEREFOR

Frederick J. Kiko, Shenandoah, Ga., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Feb. 11, 1980, Ser. No. 120,125
Int. Cl.[3] H04B *1/58*
U.S. Cl. 179—170 NC **4 Claims**



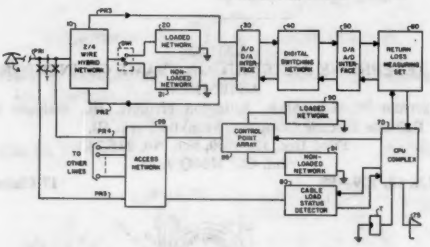
1. An electronic hybrid circuit including a balancing network and providing a signal-transmitting connection between a two-wire, bidirectional voice frequency signal-transmitting means and a four-wire, voice frequency signal-transmitting means in a voice frequency communication system, said electronic hybrid circuit comprising a two-wire port adapted to be connected to said two-wire means, a signal receive port adapted to be connected to a first signal-transmission portion of said four-wire means for receiving incoming voice frequency signals from said four-wire means, a signal transmit port adapted to be connected to a second signal-transmission portion of said four-wire means for supplying outgoing voice frequency signals thereto, a differential current driver electrically connected between said two-wire port and said receive port and responsive to an incoming voice frequency signal arriving at said receive port from said four-wire means for applying to said two-wire port an outgoing differential voice frequency signal, a signal feedback circuit electrically connected between said two-wire port and an input of said differential current driver and having a differential amplifier, said amplifier having a differential input coupled to said two-wire port for developing an output voltage in response to differential signal voltage developed across said two-wire port by an incoming differential voice frequency signal that is transmitted over said two-wire means toward said electronic hybrid circuit, said differential current driver being responsive to said output voltage for generating a simulated terminating impedance at said two-wire port, and said amplifier having an output electrically connected to said transmit port and being responsive to said incoming differential signal for supplying an outgoing voice frequency signal to said transmit port for transmission over said second transmission portion of said four-wire means, and means cooperating with said differential amplifier for preventing the signals arriving at said receive port from said four-wire means from returning to said transmit port.

4,331,843

APPARATUS FOR CONTROLLING AND INDICATING THE INTEGRITY OF THE CONNECTION OF TELEPHONE SUBSCRIBERS TO A SWITCHING SYSTEM

Lloyd A. Tarr, Elmhurst; John P. Taylor, Wheaton, both of Ill., and John S. Young, Scottsdale, Ariz., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,497
Int. Cl.[3] H04B *3/46*; H04M *3/26*
U.S. Cl. 179—175.2 R **10 Claims**



1. In a switching system including a digital network, at least one telephone subscriber connected to said switching via a first pair of leads, said first pair of leads connected to said digital network via a second and a third pair of leads,

the improvement comprising:

circuit means for balancing said connection of said first pair of leads to said second and third pair of leads and said circuit means connected via said first pair of leads to said telephone subscriber and connected via said second and third pair of leads to said digital network;

said circuit means including a first subcircuit of a first characteristic and second subcircuit of a second characteristic, said first subcircuit connected to said circuit means and alternatively, said second subcircuit connected to said circuit means;

CPU means for controlling and storing data;

detection means for determining the status of said first pair of leads, said detection means connected between said first pair of leads and said CPU means, said detection means operated in response to said CPU means to measure the impedance of said first pair leads and to transmit said measurement to said CPU means for storage:

network means for simulating said first pair of leads connected to said circuit means and to said CPU means, said network means operated in response to said CPU means selectively to connect a termination of a first characteristic to said circuit means and alternately to connect a termination of a second characteristic to said circuit means;

test means for injecting a first signal and measuring a second signal, said test means connected through said digital network to said circuit means via said second and third pair of leads, said test means further connected to said

CPU means, said test means operated in response to said CPU means to transmit said first signal and to receive said second signal and said test means further operated to transmit said second signal to said CPU means;

said network means operated in response to said CPU means to connect said termination of said first characteristic to said circuit means and said test means operated in response to said CPU means to transmit said first signal to said circuit means and transmit said received second signal to said CPU means, and alternately, said network means operated in response to said CPU means to connect said termination of said second characteristic to said circuit means and said test means further operated in response to said CPU means to transmit said first signal to said circuit means and transmit said received second signal to said CPU means; and

said CPU means operated in response to each of said transmitted second signals to compare each of said second signals to detect said connection of said first subcircuit to said circuit means in order to match said first characteristic subcircuit to said first pair of leads and alternatively to detect said connection of said second subcircuit to said circuit means in order to match said second characteristic subcircuit to said first pair of leads.

4,331,844

ELECTRIC SWITCH DEVICE

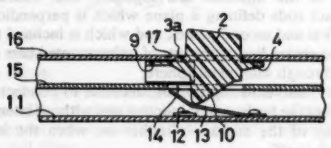
Shigeru Saitoh, 6-4, 2-chome, Kuramae, Taito-ku, Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,279

Claims priority, application Japan, Feb. 29, 1980, 55-152433[U]

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 R **15 Claims**



1. An electric switch device, comprising contact means for closing and opening an electric circuit; actuating means arranged to act on said contact means so that the latter closes and opens the electric circuit, said actuating means including a switch button element movable between a first position in which it does not act on said contact means so that said contact means opens the electric circuit, a second position in which a user applies a pressure to said button element and the latter acts on said contact means so that said contact means closes the electric circuit, but after removal of the user's pressure said button element returns to said first position, and a third position in which said button element acts on said contact means even after removal of the user's pressure so that said contact means keeps the electric circuit closed, said button element including a supporting portion and a movable portion which moves relative to said supporting portion between said positions, said movable portion including a button section arranged to be acted on by a user and a leg section arranged to act on said contact means, said supporting portion of said button element being formed as a reversed gutter, said button element having two slots separating said supporting section from the remainder of said button element and forming in said movable portion a springy section arranged to move said movable portion to said first position; and means for supporting said contact and actuating means, said supporting means having a cover plate provided with an opening having an axis and an edge, said button section projecting through said opening in an axial direction outwardly beyond said cover plate, said movable portion of said button element further having an engaging section which is arranged so that when said button element is moved in the axial direction of said opening, said engaging section is located within said opening and does not engage said cover plate and thereby said button element can assume said first and second positions, but when said button element moves in a radial direction of said opening, said engaging section extends outwardly beyond said edge of said opening and engages said cover plate so that said button element is retained in said third position and cannot be moved to said first position after removal of the user's pressure.

4,331,845

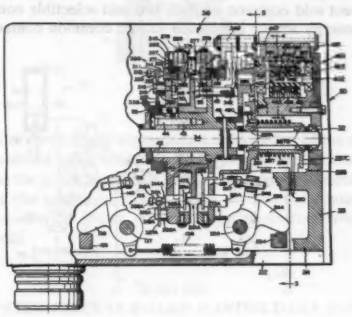
OUTPUT SWITCH ASSEMBLY AND OPERATING MECHANISM

Peter J. Caruso, Wayne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Jun. 24, 1964, Ser. No. 377,729

Int. Cl.³ H04L *9/00*

U.S. Cl. 200—45 **12 Claims**



1. A mechanism comprising a code wheel assembly including an angularly movable shaft, a first element affixed to said shaft, a second element angularly movable on said shaft, and a third element angularly movable on said shaft, a plurality of main code posts preset for locking the first element and the second element in driving relation, selectively operable means for actuating the main code posts sequentially in a predetermined sense for unlocking the second and first elements, means for limiting angular movement of the second element upon the unlocking of the first and second elements, an auxiliary code post operable in a sense for locking the first element to the third element in driving relation, means for preventing the operation of said auxiliary code post in said locking sense until the actuation of the main code posts sequentially in said predetermined sense to unlock the first and second elements followed by a predetermined angular movement of the first element relative to the second element, control means selectively actuated by angular movement of the third element relative to the second element for performing a control function, and said control means being selectively actuated by said third element following the locking of the first element to the third element by the auxiliary code post and following additional angular movement of said shaft after the first element has been unlocked from the second element.

4,331,846

TAILGATE LIFT CONTROL SAFETY CIRCUIT

Morris D. Robinson, 179 Via Los Miradores, Redondo Beach, Calif. 90277

Filed Sep. 17, 1980, Ser. No. 188,258

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—47 **6 Claims**

1. In combination with a vehicle tailgate lift of the type which includes a platform that is adapted to be moved up and down in a lifting mode while substantially level, and which is

adapted to be folded and unfolded in a folding mode when a mechanical selector means is set in a platform-fold position, a power means for exerting power to raise and to fold said platform, and down movement enabling means enabling the folded or raised platform to unfold or to lowe, a control and safety circuit comprising:

a platform limit switch whose position is adapted to be altered by said mechanical selector means when in its platform-fold position and said platform is near its uppermost position;

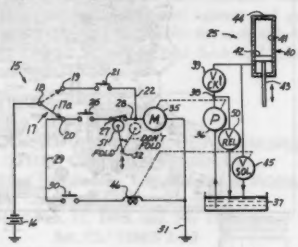
an off-on platform fold switch;

an off-on platform up switch;

an off-on platform down switch;

a platform selector switch having a first condition which enables platform fold movement and a second condition which enables the platform to move upward between lower and upper elevations without folding, said selector switch having a selector, a common contact, and two selectible contacts, one respective to each of said conditions, the selector being adapted selectively to interconnect said common contact and said selectible contacts;

an energy source connected to said common contact;



said platform fold switch being connected between the selectible contact respective to said platform fold enablement and said power means, whereby to enable or disable said power means for platform fold movement when said platform selector switch is in said first condition;

said platform limit switch and platform up switch being connected in series with one another, and between the said selectible contact respective to said platform upward enablement and said power means, said platform limit switch disabling its circuit when the platform is near its uppermost position and said mechanical selector means is in its said first condition, this circuit being in parallel connection with the circuit which includes said platform fold switch, whereby this latter circuit enables said power means for platform up movement when both of its switches are closed and disables it when either one is open, when said platform selector switch is in said second condition;

said platform down switch being connected between said selectible contact respective to said platform upward enablement and a return circuit, whereby to enable or disable said lift for platform down movement.

4,331,847

APPARATUS FOR SELECTIVELY CONNECTING AND DISCONNECTING TWO SETS OF THREE-PHASE BUSBARS VIA ISOLATING SWITCH MEANS

Jean-Loup Crétin, Villeurbanne, France, assignor to Alsthom-Atlantique, Paris, France

Filed Mar. 17, 1981, Ser. No. 244,566

Claims priority, application France, Mar. 20, 1980, 80 06232

Int. Cl.³ H01H *31/00*

U.S. Cl. 200—48 R **2 Claims**

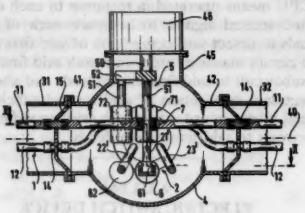
1. An apparatus for selectively connecting and disconnecting two sets of three-phase busbars via isolating switch means, said sets of busbars being covered by metal cladding and extending in two different directions in a common plane such that the center-lines of the two sets intersect, the improvement wherein:

said metal cladding comprises metal tubes surrounding said sets of busbars and extending parallel to respective sets,

a metal sphere joining said metal tubes at the intersection of said sets of busbars,

sleeve joints at the intersection of said metal sphere with the ends of said metal tubes, the axes of the sleeve joints lying in said common plane,

and wherein said sets of three-phase busbars extend uninterrupted through said sphere with the busbars of one of the sets occupying a first plane parallel to said common plane and to one side thereof, and wherein the busbars of the other set occupy a second plane parallel to said common



plane on the opposite side of said common plane to that occupied by busbars of said one set,

and wherein said isolating switch means comprises contact rods lying in a plane perpendicular to the first and second planes and movable to selectively connect corresponding bars of the different sets together, and wherein said contact rods defining a plane which is perpendicular to the first and second planes, and which is inclined relative to the center-line of the sets of uninterrupted bars extending through said metal sphere;

whereby, said isolating switch functions to connect or disconnect the busbars of respective sets without interruption of any of the busbars of either set when the isolating switch is off.

4,331,848

INERTIA ACTIVATED ELECTRICAL POWER SOURCE

Clayton J. Schneider, Jr., East Aurora, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,992

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **6 Claims**

1. An inertia-activated electrical power source comprising:

a. a battery having a first electrical contact and a second electrical contact;

b. a case having an elongated cavity with a first end for containing the said battery in a first position and a second end for containing the said battery in a second position, the battery being movable in the said cavity from the said first position to the said second position;

c. a first electrical contact and a second electrical contact positioned in the said second end of the said cavity for

making electrical contact to the said battery first and second electrical contacts respectively when the battery is in the said second position;

d. means for providing a first and a second electrical connection exterior the said case, each connected respectively with the said first and second electrical contacts positioned in the second end of the case cavity; and

e. a shear member retaining the said battery in the said first position until said inertia acting on the said battery causes the said battery to shear the said shear member and the battery to move to the said second position whereby electrical power is provided to said first and second exterior electrical connections.

4,331,849

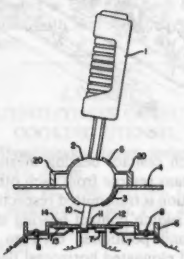
LEVER CONTROL FOR REALISTIC DRIVING TOY

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed Apr. 16, 1980, Ser. No. 140,869

Int. Cl.³ H01H *25/04*

U.S. Cl. 200—61.85 **11 Claims**



1. A control system for a toy vehicle comprising:

(a) a frame,

(b) a plate positioned adjacent said frame and universally movable in a plane parallel to the plane of said frame,

(c) control means contacting said plate for moving said plate in said plane,

(d) plural electrically conductive areas disposed on said plate, and

(e) electrical contact means associated with each of said electrically conductive areas, whereby said contact means selectively contact said associated conductive areas responsive to the position of said plate in said plane, wherein one surface of said plate contacts said frame and wherein said electrical contact means are resilient and are biased against said plate on the side of said plate opposite said one surface to maintain said plate in contact with said frame.

4,331,850

VACUUM SWITCH INCLUDING A GETTER DEVICE

Joseph H. F. G. Lipperts, Hengelo, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Filed Nov. 29, 1979, Ser. No. 98,631

Claims priority, application Netherlands, Dec. 1, 1978, 7811787

Int. Cl.³ H01H *33/66*

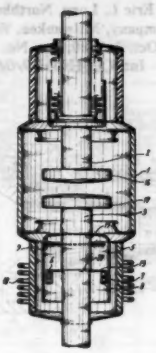
U.S. Cl. 200—144 B **4 Claims**

1. A vacuum switch, comprising:

a vacuum-tight envelope having walls of insulating material;

vacuum contacts mounted on current carrying contact rods, which contacts can be moved with respect to one another;

an electrically conducting ring-shaped getter device coaxially supported by one of said contact rods, said getter device comprising a getter element of material which upon evaporation by the heat of a current induced in said ring-shaped getter device may absorb gases optionally present within said envelope, and including a cylindrical metal shield, coaxially supported by said contact rod and located between said getter element and the walls of said envelope, said shield serving as the surface upon which getter material is deposited, said shield including slots for preventing the flow of eddy currents in said shield, in which the getter element emits the getter material by evaporation at a single segment only of said ring-shaped



getter device, said segment and the location of the slots in the shield being situated with respect to one another such that the getter material is located between said contact rod and the inner wall of the shield, so that the contact rod prevents the getter material from emanating from said shield.

4,331,851

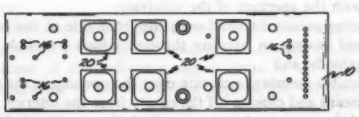
PRINTED CIRCUIT BOARD HAVING DATA INPUT DEVICES MOUNTED THEREON AND INPUT DEVICES THEREFOR

Larry K. Johnson, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 16, 1980, Ser. No. 159,906

Int. Cl.³ H01H *13/44*

U.S. Cl. 200—159 B **15 Claims**



1. A data input device comprising a housing, formed of electrically insulative, molded material, the housing having bottom and side wall means and an open end, a disc mounting surface spaced a selected distance above the bottom wall means, the disc mounting surface including a first portion formed in the side wall means and a second portion formed of a first electrically conductive member, the first portion being shaped as a discontinuous annular configuration, the bottom wall having first and second apertures extending therethrough, the first aperture located generally on the imaginary continuation of the discontinued portion of the annular configuration, the second aperture located generally in the center of the annular configuration, the electrically conductive member having a shank depending therefrom, the shank extending through the first aperture, a second electrically conductive member having a contact surface and a shank depending therefrom received in and extending through the second aperture, an electrically conductive, snap-acting disc having a diameter selected to fit on the disc mounting surface, a flexible gasket disposed at the open end of the housing and adapted to sealingly close the open end and an cover member having a cen-

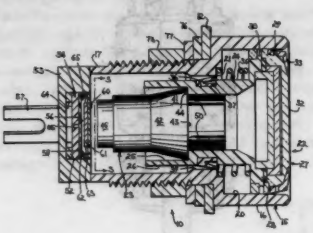
trally disposed opening placed over the gasket and attached to the housing to capture the gasket and lock it in place.

4,331,852

INDUSTRIAL MEMBRANE SWITCH WITH BREATHER

Michael S. Baran, St. Francis; Gary C. Fillus, South Milwaukee, both of Wis., and Eric L. Long, Northbrook, Ill., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 3, 1980, Ser. No. 193,490
Int. Cl.³ H01H 9/04
U.S. Cl. 200—306 **5 Claims**



1. In an electrical switch having a switch operator housing in which a switch operator with a distal end is disposed for axial movement towards a corresponding, distal end of the operator housing, the combination therewith of a contact unit which comprises:

housing closure means that extends over the distal end of the operator housing, the housing closure means forming a cavity that is sealed within the switch;

a substrate disposed in the cavity of the housing closure means, the substrate having a first contact element disposed on its front side and the substrate having an aperture through it from its front side to its back side;

a pair of switch terminals mounted on the housing closure means, each terminal being electrically connected to a respective termination area;

means in the cavity for supporting the substrate so that its back side is spaced from an interior surface of the housing closure means to form an air reservoir that communicates with the aperture of the substrate;

spacing means disposed over the front side of the substrate and having an opening through which a switch air gap extends; and

a flexible membrane closing over the opening in the spacing means and closing off the cavity from the interior portion of the operator housing in which the operator is disposed, the flexible membrane having a second contact element on its back side that is positioned in opposition to the first contact element and separated therefrom by the switch air gap, wherein the membrane is deflected by the actuating movement of the switch operator to urge the second contact element into contact with the first contact element on the substrate while expelling air from the switch air gap to increase the air pressure within the air reservoir, and wherein the membrane is urged by the air pressure from the air reservoir to move back to its position prior to deflection when the switch operator is deactuated.

4,331,853

MULTIPLE SWITCH ACTUATING MECHANISM

Robert W. Ireland, 138 Clay Dr., Penn Hills, Pa. 15235

Continuation of Ser. No. 860,628, Dec. 14, 1977, abandoned. This application Sep. 20, 1979, Ser. No. 77,406
Int. Cl.³ H01H 3/04
U.S. Cl. 200—330 **5 Claims**

1. A multiple switch actuating mechanism for use in combination with a biased open switch unit, said multiple switch actuating mechanism including

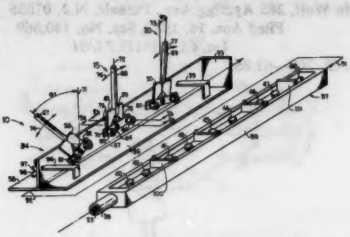
(a) an angle shaped member to supportingly receive said biased open switch unit in its entirety,

said angle shaped member having an elongated vertical flat portion and at least one elongated horizontal flat portion integrally secured to said elongated vertical flat portion to thereby form said angle shaped member, said biased open switch unit supported in its entirety on said elongated horizontal flat portion,

(b) said elongated vertical flat portion having a pivotal means secured at right angles thereto and parallel to said horizontal flat portion,

(c) rocker arm means secured to said pivotal means for oscillatory motion in a plane parallel to said elongated vertical flat portion,

said rocker arm means having a first and a second rotatably



mounted switch contact bearing means secured to said rocker arm means remote from each other, such that said oscillatory motion is transmitted respectively to said rotatably mounted switch contact bearing means, said biased open switch unit positioned between said rocker arm means and said elongated horizontal flat portion,

(d) at least one actuating handle for said mechanism secured to said rocker arm,

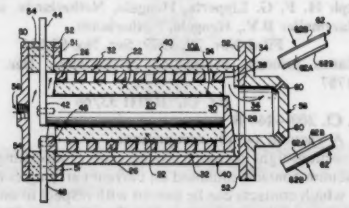
said rotatably mounted switch contact bearing means providing a driving contact with respectively a first and a second biased open switch whereby an oscillatory force applied to said actuating handle causes said oscillatory motion to be transmitted to said first and said second biased open switches to establish unidirectional reciprocating motion to said first and said second biased open switches.

4,331,854

LOW FREQUENCY INDUCTION HEATER

Romano Balordi, Millers, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Feb. 28, 1980, Ser. No. 125,455
Int. Cl.³ H05B 5/08
U.S. Cl. 219—10.51 **9 Claims**



1. An induction heater means for heating a gas as said gas passes therethrough and energizable by a low frequency alternating current from a power source means, said heater means comprising:

sheathed induction coil means having convolute winding

means extending axially thereof and responsive to the said alternating current from a said power source means for generating a variable electromagnetic field in response thereto;

core means disposed substantially coextensively with and through said induction coil means and insulated therefrom for generating heat therein in response to said variable electromagnetic field;

said core means and said sheathed induction coil means defining a heat exchange flow path therebetween following said convolute winding means from one end to the other thereof;

connecting means for placing said winding means electrically in series with said core means across a said power source means providing a low frequency alternating current;

gas inlet means on said sheathed winding means for ingesting gas to be heated into one end of said heat exchange flow path; and

gas outlet means on said sheathed winding means for directing a flow of heated gas away from the other end of said heat exchange flow path;

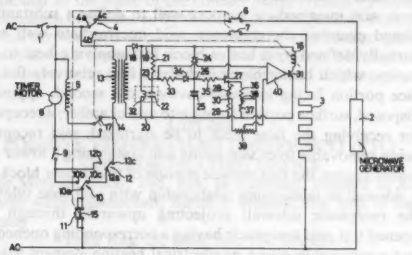
said gas being heated in said flow path by mutual heat exchanging contact with said sheathed winding means and said core means.

4,331,855

GAS SENSOR OUTPUT/TIMER OUTPUT CONTROLLED COOKING UTENSIL

Takeshi Tanabe, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1980, Ser. No. 123,647
Claims priority, application Japan, Feb. 23, 1979, 54-21060
Int. Cl.³ H05B 9/06
U.S. Cl. 219—10.55 B **6 Claims**



1. In a cooking utensil for cooking a foodstuff including a timer, a gas sensor for detecting the concentration of a gas emitted from said foodstuff and for developing an output in response thereto, said gas including reducing gases, said gas sensor detecting the concentration of said reducing gases emitted from said foodstuff, and manual selection means for selecting a desired cooking condition for said foodstuff when said selection means is placed in one of a plurality of desired positions, said selection means being disposed on a control panel, said control panel comprising:

volume resistor means responsive to the selection of said desired cooking condition by said selection means for determining a desired reference signal, said reference signal being compared with said output from said gas sensor for controlling said cooking utensil; and

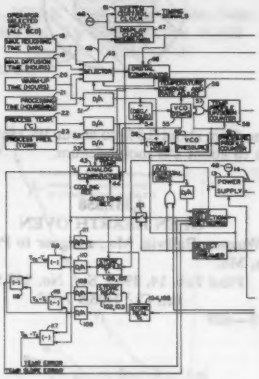
first switch means responsive to the placement of said selection means at a preselected position other than said desired positions for enabling said timer and disabling said gas sensor thereby removing said cooking utensil from a gas sensor controlled cooking operation mode and placing said cooking utensil in a timer controlled cooking operation mode.

4,331,856

CONTROL SYSTEM AND METHOD OF CONTROLLING ION NITRIDING APPARATUS

Nicholas F. D'Antonio, Liverpool, N.Y., assignor to Wellman Thermal Systems Corporation, Shelbyville, Ind.

Filed Oct. 6, 1978, Ser. No. 949,219
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 P **14 Claims**



1. A control system for an apparatus for the glow discharge treatment of a workpiece, the apparatus including a housing forming a chamber to receive a workpiece and a low pressure ionizable gas atmosphere and means for establishing a glow discharge with the workpiece connected as the cathode; said control system including:

reference means for providing a reference signal having an increasing value based on a predetermined time related increase in the temperature of the workpiece as the workpiece is heated to a predetermined operating temperature; and

temperature measurement means for measuring the temperature of the workpiece and providing a temperature signal representative of the measured temperature of the workpiece;

said reference means being connected to said temperature measurement means and adapted to reduce the rate of increase of the reference signal value as the measured temperature of the workpiece approaches the operating temperature of the workpiece.

4,331,857

ALLOY-CORED TITANIUM WELDING WIRE

Joseph R. Crisci, Crofton; Robert De Nale, Annapolis, and Gene L. Franke, Severna Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1980, Ser. No. 117,141
Int. Cl.³ B23K 35/32
U.S. Cl. 219—137 WM **9 Claims**

1. A welding wire comprising a hollow tubular portion of titanium metal and a core portion filling said tubular portion; said core portion being formed of material selected from the group of aluminum, molybdenum, niobium, tantalum and vanadium; and said welding wire consists, by weight percent,

essentially of from about 81% to about 96% titanium; from about 2% to about 10% aluminum; from about 1% to about

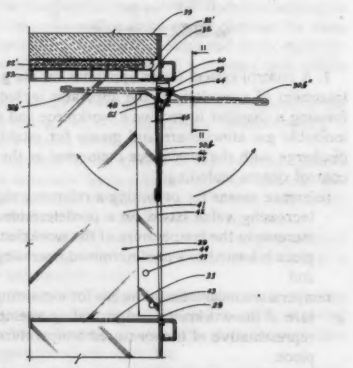
4% niobium; from about 0.5% to about 3% tantalum; and from about 0.5% to about 2% molybdenum.

4,331,858

OPEN HEARTH OVEN

Dennis L. Wagner, Ballwin, Mo., assignor to Pet Incorporated, St. Louis, Mo.

Filed Feb. 14, 1980, Ser. No. 168,572
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—405 **5 Claims**



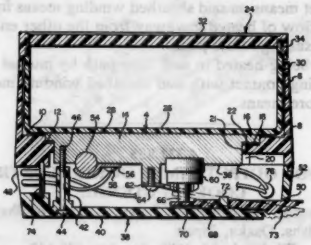
1. In an infrared oven of the open hearth type having an oven chamber for receiving food products or the like to be heated by infrared radiation including emitting surfaces therein for directing infrared radiation into said oven, said chamber having a rectangular opening of width substantially greater than its height, the improvement characterized by an infrared radiation reflective shield hingedly disposed across substantially the entire width of said opening, said shield having a top edge located proximate the upper edge of said opening, means hingedly securing said shield to said oven to define a hinge axis substantially parallel to the upper edge of said opening for permitting swinging of said shield on said hinge axis either outwardly or inwardly with respect to said opening, said shield normally being suspended from said hinge axis for occupying a radiation-reflective blocking position for blocking only the upper portion of said opening against escape of infrared radiation while permitting the remaining lower portion of said opening to remain open, with the lower edge of said shield spaced above the lower edge of said opening to permit food products or the like to be inserted into said opening beneath the lower edge of said shield and to permit visual inspection of the contents of said chamber, said shield when swung on said hinge axis being movable to a retracted position not blocking the upper portion of said opening, latch means for causing said shield to be latched in said retracted position, said latch means being located at one side of said opening and being selectively releasable by contact pressure of a food handling object in the direction of one side of said opening to permit said shield to swing under the force of gravity from its latched to its blocking position, said shield having an infrared reflective surface facing toward the interior of said chamber, said surface being of highly infrared-reflective material for reflecting back into said chamber infrared radiation emitted within said chamber, said shield also blocking escape of air heated in said chamber.

4,331,859

DEVICE FOR STERILIZING FALSE TEETH

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Nov. 28, 1980, Ser. No. 211,251
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—521 **3 Claims**



1. A false teeth sterilizer comprising: a base member including, a cavity defined by an intermediate support wall and a surrounding sidewall, said cavity opening at the top of the base, said base member further including a bottom wall spaced from said intermediate support wall to define a substantially closed chamber therebetween, said intermediate wall being partially defined by a heater block for supplying heat to said cavity, which heater block includes a first relatively flat surface portion facing into said cavity and a second, oppositely disposed, surface portion facing into said chamber; a receptacle for receiving the false teeth to be sterilized, said receptacle being removable from said cavity and comprising a lower wall seated against the first surface portion of said heater block and a sidewall in telescoping relationship with said base sidewall, the receptacle sidewall projecting upwardly through said opened top, said receptacle having a corresponding opened top and a removable cover; an electrical heating element for said heater block disposed in said chamber and engaged against said second, oppositely disposed, surface portion of the heater block; circuit components also disposed within said chamber for supplying current to said heating element and including a thermostatic switch in circuit with said heating element and disposed in said chamber and engaged against said second oppositely disposed surface portion of said heater block at a location spaced from said electrical heating element, said thermostatic switch being capable of breaking the flow of current to said electrical heating element when the heater block reaches a predetermined temperature, said thermostatic switch including a reset plunger within the chamber and extending toward said base wall, but spaced from said base wall, which plunger when operated is capable of reestablishing the flow of current to said electrical heating element, a lever member rockably mounted on an interior surface of said bottom wall and including a first end portion disposed between said plunger and said bottom wall, said lever including an opposite end projecting outwardly and exteriorally of said base member, such as said lever member may be depressed and rocked to cause said first end portion to engage and actuate said reset plunger.

4,331,860

ELECTRICAL RESISTANCE HEATING ELEMENT

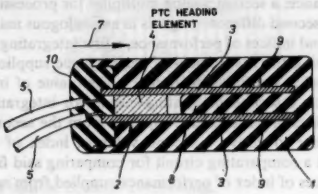
Hanno Roller, Kandel; Karl-Heinz Nauerth, Erlenbach, and Rudi Kitt, Herxheim, all of Fed. Rep. of Germany, assignors to Fritz Eichenauer GmbH & Co. KG, Kandel, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,417

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948592

Int. Cl.³ H05B 3/02

U.S. Cl. 219—544 7 Claims



1. Electrical resistance heating element comprising a contact arrangement having at least one heating conductor in the form of an element which is provided at opposite surfaces with an electrical contacting means and is made of a material having a positive temperature coefficient of electrical resistance (PTC element), and two substantially planar contact plates, the PTC element being interposed between said plates; a sleeve of elastically flexible, electrically insulating, heat conductive material having an inner space whose internal cross-section is slightly smaller height-wise relative to the cross-section of the contact arrangement, the contact arrangement being inserted into the inner space in the sleeve and held therein, with the contact plates pressed against the PTC element, under a pressure perpendicular to the plane of the contact plates created by elastic compression of the sleeve by the contact arrangement, wherein the full surface area of one side of each of said contact plates presses directly against an inner wall of the sleeve defining said inner space; and sealing means for sealing said inner space.

4,331,861

POSITIVE TEMPERATURE COEFFICIENT (PTC) RESISTOR HEATING DEVICE

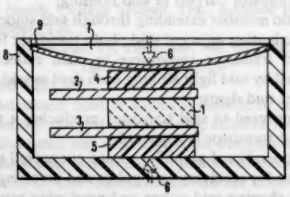
Hans Meixner, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,188

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939470

Int. Cl.³ H05B 3/10

U.S. Cl. 219—553 6 Claims



1. A heating device comprising:

a positive temperature coefficient resistor plate including a pair of opposite surfaces;

a pair of ductile metal layers contacting respective ones of said opposite surfaces, said electrodes not being unitary parts of the PTC resistor plate; and

means urging said ductile metal layers against the respective surfaces at a permanent pressure of at least 0.3×10^8 Pa, each of said ductile metal layers constituting a current supply electrode and including a respective electrical terminal.

4,331,862

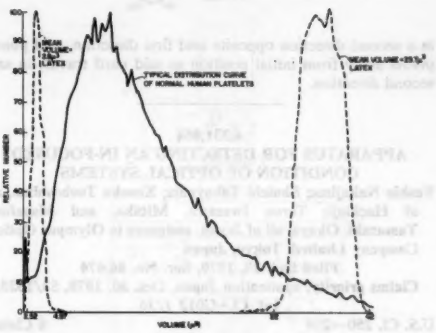
METHOD FOR CALIBRATING A PARTICLE COUNTING MACHINE AND A CALIBRATION STANDARD THEREFOR

Wayne L. Ryan, 3631 S. 116th Ave., Omaha, Nebr. 68144

Filed Feb. 23, 1979, Ser. No. 14,603

Int. Cl.³ G06M 11/00

U.S. Cl. 235—92 PC 14 Claims



1. A method for testing an instrument used to count a plurality of particles having a particle size distribution that extends between a lower extreme size distribution and an upper extreme size distribution to see if it is in calibration, the method comprising in any order:

counting a first known concentration of particles having a known count with the instrument to be calibrated, the mean size of the particles in said first known concentration being substantially near the lower extreme size distribution;

comparing the count of said first counted concentration with the known count of said first known concentration;

counting a second known concentration of particles with the instrument to be calibrated, the mean size of the particles in said second known concentration being substantially near the upper extreme size distribution; and

comparing the count of said second counted concentration with the known count of said second known concentration.

4,331,863

PUNCH MECHANISM FOR MACHINE ACTUATOR CARDS

George B. Sidline, Belmont, and Shattuc Jones, Half Moon Bay, both of Calif., assignors to Service Distributors, Inc., San Francisco, Calif.

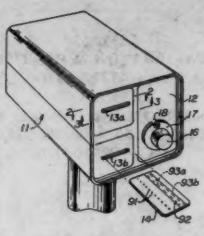
Filed Oct. 29, 1980, Ser. No. 201,706

Int. Cl.³ G06K 7/14, 1/20

U.S. Cl. 235—434 4 Claims

1. In a card punching apparatus wherein are provided first means forming a passageway for said card, second means for driving said card through said passageway and third means for sensing the position of said card in said passageway, the improvement which comprises a punch having a point moveable into and out of said passageway and when moved into said passageway punching said card, a holder for said punch, a solenoid actuated by said third means, fourth means actuated by said solenoid and actuating said holder, said holder being pivotally connected to said fourth means, resilient means biasing pivotal movement of said punch toward initial position

relative to said fourth means whereby when said point pierces said card and while said card is moving along said passageway



in a second direction opposite said first direction, said punch pivots away from initial position as said card travels in said second direction.

4,331,864

APPARATUS FOR DETECTING AN IN-FOCUSED CONDITION OF OPTICAL SYSTEMS

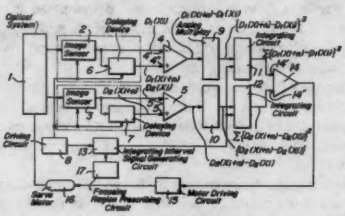
Yoshio Nakajima; Shuichi Takayama; Kosaku Tsuboshima, all of Hachioji; Teruo Iwasawa, Mitaka, and Masafumi Yamazaki, Okaya, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Oct. 19, 1979, Ser. No. 86,674

Claims priority, application Japan, Oct. 30, 1978, 53/133558

Int. Cl.³ G01J *1/36*

U.S. Cl. 250—204 **8 Claims**



1. An improved apparatus for detecting an in-focus condition of an optical system comprising a first image sensor arranged to receive a first image formed at a first position in front of a predetermined focal plane of the optical system and formed of a number of charge transfer elements, each element producing an illumination signal of respective picture elements of said first image; a second image sensor arranged to receive a second image formed at a second position in the rear of the focal plane of optical system and formed of a number of charge transfer elements, each element producing an illumination signal of respective picture elements of said second image; a first processing circuit for receiving said illumination signals produced by said first and second image sensors for deriving a first value of index of performance on the basis of differences between the illuminance signals supplied from the first image sensor and a second value of index of performance on the basis of differences between the illuminance signals supplied from the second image sensor; and a second processing circuit for comparing said first and second values of index of performance with each other, to derive an output signal representing direction and magnitude of deviation of the optical system from its in-focused position; the improvement comprising: a first delaying device formed of a charge transfer device for delaying the successive illumination signals supplied from the first image sensor by a predetermined number of periods of the illumination signals; a second delaying device formed of a charge transfer device for delaying the successive illumination signals supplied from the second image sensor by said predetermined number of periods of the illumination signals; a first differential amplifier for comparing the successive illumination signals supplied from the first image sensor with the successive delayed illumination signals supplied from said first delaying device to derive successive first difference signals; a second differential amplifier for comparing the successive illumination signals supplied from the second image sensor with the successive delayed illumination signals supplied from said second delaying device to derive successive second difference signals; a first analog multiplier for processing said successive first difference signals in an analogous manner to derive first indices of performance; a second analog multiplier for processing said successive second difference signals in an analogous manner to derive second indices of performance; a first integrating circuit for integrating the first indices of performance supplied from the first analog multiplier to derive a first value of index of performance; a second integrating circuit for integrating the second indices of performance supplied from the second analog multiplier to derive a second value of index of performance; and a comparating circuit for comparing said first and second values of index of performance supplied from said first and second integrating circuits with each other, to produce an analog difference signal having a polarity which represents a direction of deviation of the optical system from the in-focused position and an amplitude which represents a magnitude of said deviation.

4,331,865

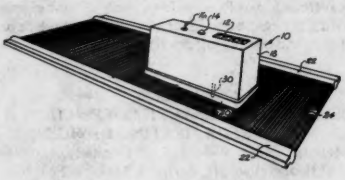
DENT COUNTER FOR LOOM REED

Maurice E. Blevins, Spartanburg, S.C., and Gilbert E. Carlson, Asheville, N.C., assignors to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed Oct. 9, 1979, Ser. No. 82,800

Int. Cl.³ G01V *9/04*

U.S. Cl. 250—222 PC **1 Claim**



1. An apparatus for counting the dents of a loom reed comprising:

a housing having a relatively smooth surface allowing said housing to be manually slid over said dents to be counted;

a source of light directed towards said dents;

a photo transistor carried in said housing;

a fiber optic member extending through said smooth surface and terminating adjacent said photo transistor for triggering said transistor responsive to each reflected signal produced by said light striking each dent as said housing is slid over said dents;

means connected to said transistor producing a pulse each time said transistor is triggered;

a pair of operational amplifier means connected to the said transistor for receiving said pulses and inverting, amplifying and shaping said pulses and producing saturated signals responsive to each pulse;

counter means for counting said saturated signals;

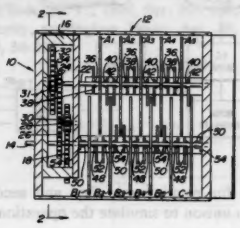
means connected to said counter means for visually displaying the count registered by said counter thereby indicating the total number of dents counted; and

a second fiber optic member concentrically carried on said fiber optic member extending through said smooth surface for guiding said light from said light source to said dents.

4,331,866
ELECTRO-MECHANICAL DIGITAL FEED CONTROL

Alfred Batzdorff, Lansdale, Pa., assignor to American Electronic Laboratories, Inc., Lansdale, Pa.

Filed Jun. 5, 1980, Ser. No. 156,730
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 SE 16 Claims



1. An optical encoder comprising:

(a) program discs mounted on rotating shafts, said discs having holes at predetermined intervals within concentric bands, whereby the number and spacing of the holes within the concentric bands comprises the programs of the disc;

(b) a first set of said program discs having a reference rotational speed;

(c) a second set of program discs having a rotational speed equal to a whole number multiple of the rotational speed of the first set of program discs;

(d) said second set of program discs having a uniform arcuate portion on each concentric band where no holes are located, and the first set of program discs having the holes in each concentric band located approximately at arcuate positions which are whole number multiples of 360° divided by the ratio of the speed of said second set of program discs to the speed of said first set of program discs;

(e) one or more light sources;

(f) an array of photocells aligned with the concentric bands of the program discs to receive pulses of light when program holes pass between the light source and a photocell, and produce a pulse of electrical energy when a pulse of light is received;

(g) means for selectively connecting the electrical outputs of one or more of said photocells to the output of the optical encoder, so that a string of electrical pulses corresponding to the concentric band associated with the connective photocells is put out by the encoder.

4,331,867
PHOTOCONDUCTIVE INSTRUMENT

Sherrel C. Smith, College Station, Tex., assignor to Chromaco, Inc., Abilene, Tex.

Filed Jun. 19, 1980, Ser. No. 161,036
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 R 10 Claims

1. An instrument control appartus capable of regulating the flow of electric current by detecting relative movement between an indicator and a control zone, comprising:

(a) a light source which can be positioned close to the control zone so that illumination from the control zone will change responsive to movement of the indicator;

(b) photoconductive means for sensing illumination from the control zone and varying electrical resistance in response to relative movement between the indicator and control zone for varying an output voltage;

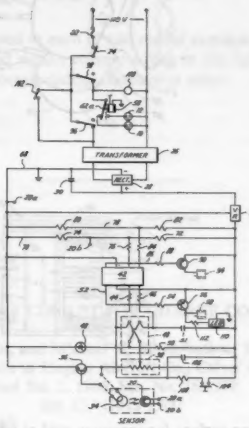
(c) means for generating a first predetermined reference voltage;

(d) first comparing and generating means for comparing the output and reference voltages and generating a first predetermined output current when one of the voltages is greater than the other one;

(e) a first circuit for supplying electric current to the instrument;

(f) first regulating means connected to the output of the comparing and generating means for regulating the first circuit by closing the first circuit and allowing electric current to flow through the first circuit when one of the conditions of an output current either above or below the first predetermined output current is created by the comparing and generating means, the regulating means opening the circuit and interrupting the flow of current when the other of said conditions occurs;

(g) a lamp circuit for supplying electric current to the light



source, the light source generating an output voltage when it is on;

(h) means for generating a second predetermined reference voltage lower than the light source output voltage;

(i) second comparing and generating means for comparing the light source output and second reference voltages and generating a second output current when the light source output voltage is greater than the second reference voltage;

(j) second regulating means connected to the output of the second comparing and generating means for opening the first circuit and interrupting the flow of current to the instrument when the second output current is below a predetermined level and closing the first circuit when the second output current is above the predetermined level.

4,331,868
MOUNTING SYSTEM FOR OPTICAL CONTROLS

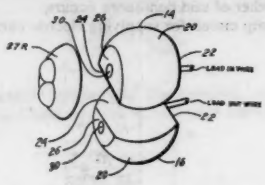
William R. Mash, 1903 NE. Sawdust Hill Rd., Poulsbo, Wash.

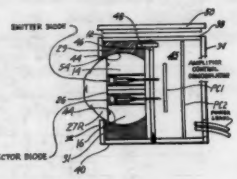
Filed Feb. 14, 1980, Ser. No. 121,329
Int. Cl.³ H01J 5/02
U.S. Cl. 250—239 1 Claim

1. Standardized housing and mounting means for photoelectric control systems using any one of through-beam, proximity and reflex scanning modes and containing at least one of a light-emitter and a light detector component:

(a) an outer housing of generally rectangular configuration on the exterior thereof and provided on the interior with retainer socket means having two opposed and spaced apart partial spherical engagement surfaces to define a partial ball socket, said outer housing also including cavity means therein for containment of electrical circuitry and further including a front opening therein to accommodate the passage of photoelectric light beams into and out of the interior of said housing,

(b) spherical mounting means comprising at least a partial spherical member received in said partial ball socket and having sufficient spherical surface to coact with said partial ball socket in said outer housing to enable said partial spherical member to swivel a predetermined amount, said partial spherical member also having a generally flat planar front lens engaging surface registering with said housing opening, said lens engaging surface being inside said housing such that a portion of said spherical engagement surfaces are engageable by lens means, said spherical mounting means having cavity opening means to said lens





engaging surface for receiving said at least one of a light emitter and a light detector component,

(c) lens means engageable with said lens engaging surface and also engageable with said spherical engagement surfaces inside said housing and alignable with said cavity opening means,

(d) detachable securing means for holding said partial spherical member firmly in place within said retainer socket means; and

(e) said partial spherical member being comprised of a pair of mating, at least partial half-sphere members of which each may be provided with cavity opening means.

4,331,869

DYNAMIC CARDIAC QUALITY ASSURANCE PHANTOM SYSTEM AND METHOD

Frank D. Rollo, Nashville, Tenn., assignor to Capintec, Inc., Montvale, N.J.

Filed Jun. 23, 1980, Ser. No. 162,200

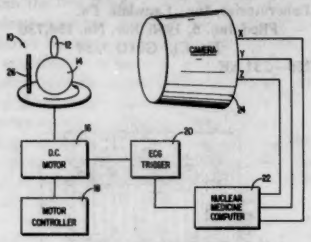
Int. Cl.³ G01D *18/00*; G01T *1/20*

U.S. Cl. 250—252 **10 Claims**

1. A dynamic phantom device for simulating operation of a heart, comprising:

a first rotatable ellipsoid having a first axis of rotation for simulating an atrium of the heart,

a second rotatable ellipsoid vertically disposed with respect to said first rotatable ellipsoid and having a second axis of rotation perpendicular to the first axis of rotation for simulating a ventricle of the heart, and



motor means for rotating said first and second rotatable ellipsoids in unison to simulate the operation of the heart.

4,331,870

APPARATUS FOR X-RAY FLUORESENCE ANALYSIS

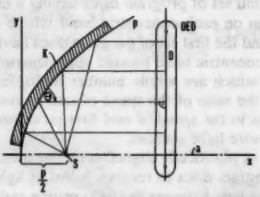
Norbert Weichert, Ettlingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,277

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925593

Int. Cl.³ G01N *23/20*

U.S. Cl. 250—280 **6 Claims**



1. In apparatus for x-ray fluorescence analysis, comprising means for exciting x-ray fluorescence radiation in a specimen to provide a source of radiation, an analyzer crystal and a position sensitive detector, the improvement comprising:

(a) means for shaping the source for the radiation to be analyzed to be approximately point shaped or line shaped;

(b) the analyzer crystal being a parabolically curved analyzer crystal, the lattice planes of which are parallel to its surface, the source located at its focus; and

(c) the position sensitive detector arranged with its axis perpendicular to the axis of the parabola of the parabolic analyzer crystal opposite said crystal.

4,331,871

FLUORESCENT DETECTION OF FLAWS

Sidney Allinikov, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 76,631, Sep. 18, 1979, Pat. No. 4,273,671. This application Apr. 17, 1980, Ser. No. 141,522

Int. Cl.³ C09K *3/00*

U.S. Cl. 250—302 **10 Claims**

1. A method for the non-destructive testing of an object to detect flaws therein which comprises depositing on a surface of the object, spherical, compressible microcapsules containing a fluorescent dye; removing excess microcapsules from the surface; and viewing the surface under ultraviolet light.

4,331,872

METHOD FOR MEASUREMENT OF DISTRIBUTION OF INCLUSIONS IN A SLAB BY ELECTRON BEAM IRRADIATION

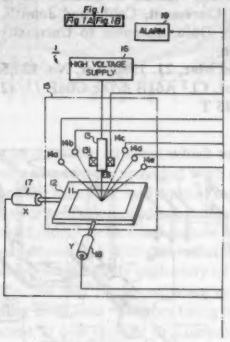
Hiromu Soga; Koichi Kitamura, both of Kitakyushu; Tomio Sasaki, Tokyo; Mitsuyoshi Sato, Tokyo, and Hiroshi Ishijima, Tokyo, all of Japan, assignors to Nippon Steel Corporation and Kabushiki Kaisha Daini Seikosha, both of Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,573

Claims priority, application Japan, Jun. 29, 1979, 54-82831; Jun. 29, 1979, 54-82832

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—307 **7 Claims**



1. A method for the measurement of the distribution of the inclusion in a slab by detecting the characteristic X-rays emitted by the elements of the inclusions due to the irradiation of an electron beam, characterized in that said method comprises the steps of:

irradiating an electron beam having a cross-section with a diameter between 0.1 mm and 10 mm onto a specimen of a slab on a table in an evacuated chamber;

effecting a spectrum analysis of the X-rays emitted from the surface of the specimen due to the irradiation of the electron beam by using flat surface analyzing crystals;

moving the table relative to the electron beam for two-dimensionally varying the position of the electron beam irradiation on the surface of the specimen, and;

obtaining the data of the two-dimensional distribution of the elements of the inclusions in the surface of the specimen.

4,331,873

PHOTOCAPACITIVE IMAGE CONVERTER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; William E. Miller, Hampton, Va.; Arden Sher, Belmont, and Yuan H. Tsuo, Freemont, both of Calif.

Filed Jun. 20, 1980, Ser. No. 161,256

Int. Cl.³ H01J *31/49*; G01T *1/22*

U.S. Cl. 250—330 **6 Claims**

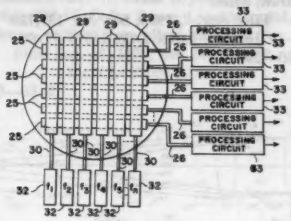
1. An apparatus for converting a radiant energy image into corresponding electrical signals comprising:

an image converter responsive to the radiant energy spectrum of the image desired to be converted;

said image converter comprising a substrate layer of semiconductor material, an insulating layer deposited on the front surface of said substrate layer, an electrical contact layer on the back surface of said substrate layer, a series of parallel transparent conductive stripes on said insulating layer with an output contact on an end of each of said stripes;

means for focusing said image to be converted onto said image converter;

means for modulating the voltages created on said conductive stripes along parallel straight lines perpendicular to said conductive stripes; and



means connected to each of said output contacts for detecting electrical signals corresponding to the light intensity along the corresponding conductive stripe.

4,331,874

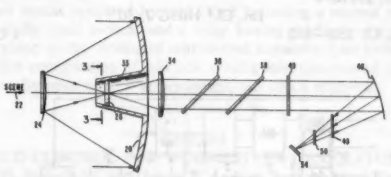
DC RESTORE CIRCUIT FOR CHARGE COUPLED DEVICES

James S. Duncan, and Michael Y. Pines, both of Los Angeles, Calif., assignors to Hughes Aircraft Co., Culver City, Calif.

Filed Jul. 2, 1980, Ser. No. 165,179

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—347 **12 Claims**



1. In a detector array system responsive to a scene and having a plurality of CCD data channels each receiving charges derived from a different line of detectors of a detector array, a system for establishing data charge packets transferred from each of said CCD channels to a value referenced to a common DC level comprising:

first means for applying cold reference energy to said detector array; and

a plurality of correction circuits including for each of said data channels:

a split-off channel coupled to said data channel and including gating means and charge storage means, said gating means transferring a selected charge packet to said charge storage means representative of the DC response of said line of detectors when said cold reference energy is applied to said detector array, said charge storage means providing a correction voltage, and

charge generating means coupled between said charge storage means and said data channel for transferring a correction charge representative of the difference between said common DC level and said correction voltage to said data charge packets being transferred along said data channel so that said data charge packets are referenced to said common DC level.

4,331,875

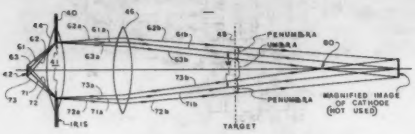
SHADOW CASTING ELECTRON-BEAM SYSTEM

John E. Wolfe, Julian, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 7, 1980, Ser. No. 137,728

Int. Cl.³ G01K *1/08;* **H01J** *37/00*

U.S. Cl. 250—398 **9 Claims**



1. An electron-beam system comprised of:

an iris having an aperture of predetermined shape;

means for emitting electrons from an area which is substantially smaller than said predetermined shape;

means for forming a magnified image and a demagnified shadow of said aperture with said emitted electrons along a path through said aperture;

and

means for placing a target along said path in the demagnified shadow of said aperture.

4,331,876

ONE- OR TWO-PULSE X-RAY DIAGNOSTIC GENERATOR

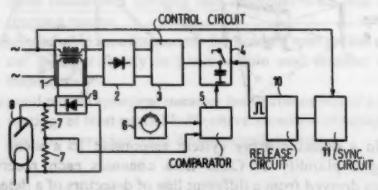
Heribert Amtmann, Langensendelbach; Karlheinz Broenner, and Johann Seissl, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,097

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917594

Int. Cl.³ H05G *1/30*

U.S. Cl. 250—402 **1 Claim**



1. A pulse type x-ray diagnostic generator comprising an x-ray tube, a high voltage transformer with a primary winding for connection to the mains and a secondary winding, said secondary winding having x-ray tube supply means connected with the x-ray tube for supplying a high voltage pulse waveform with a limited number of pulses of high voltage to the x-ray tube, control loop means for controlling the amplitude of the high voltage pulse waveform, a rectifier bridge circuit connected with the primary winding of the high voltage transformer and having direct current terminals, electronic control means for adjusting the x-ray tube voltage, being connected with the direct current terminals of said bridge rectifier circuit, said control loop means comprising a comparator connected with said x-ray tube supply means and operable for supplying an output error value in accordane with the error between a setpoint value representing a desired amplitude of said high voltage pulse waveform and an actual value representing the actual instantaneous amplitude of said high voltage pulse waveform, storage circuit means connected with said comparator for receiving said output error value therefrom, a release circuit synchronized with the mains frequency and operable in successive error value storage cycles to control said storage circuit means to store an output error value occurring at a time interval (t1) within a half wave of the x-ray tube high voltage pulse waveform, and means connecting said storage circuit means with said electronic control means such that the electronic control means is operable after each error value storage cycle for adjusting the x-ray tube voltage in accordance with the output error value stored by said storage circuit means.

4,331,877

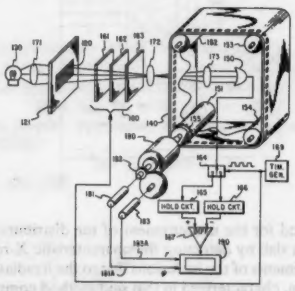
TRANSVERSE TOMOGRAPHY WITH OPTICAL FILTERING

Harrison H. Barrett; William Swindell, both of Tucson, Ariz.; Scott Gordon, Claremont, Calif., and John E. Greivenkamp, Jr., Cincinnati, Ohio, assignors to University Patents, Inc., Norwalk, Conn.

Filed Mar. 21, 1980, Ser. No. 132,562

Int. Cl.³ A61B *6/00;* **G06F** *15/42*

U.S. Cl. 250—445 T **37 Claims**



1. Apparatus for optically filtering a light beam with a filter function having a spatial characteristic that has both positive and negative components, and for producing an electronic representation of said filtered light beam, comprising:

first optical filtering means representative of the positive component of said filter function;

second optical filtering means representative of the negative component of said filter function;

means for alternatively interposing said first and second filtering means in the path of said beam;

electro-optical sensing means for receiving the filtered beam;

means for combining successive electronic outputs of said electro-optical sensing means; and

means synchronized with said interposing means for controlling the polarity of said combining means.

4,331,878

INFRARED RADIATION SYSTEM

Manfried Steinmetz, Stettiner Strasse 14, 3410 Northeim, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,106

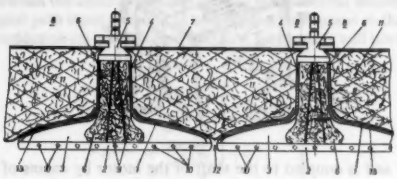
Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919964

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—504 R **11 Claims**

1. An infrared radiating system, comprising a support; a plurality of hollow ceramic infrared radiators each including a front portion having a radiating element with a substantially flat radiating surface, and a rear portion mounted to said support, said front portion having also a substantially conical section and a hollow space between said conical section and said flat radiating surface; electrical conductors passing through said hollow interiors of the radiators and through said radiating element with said flat radiating surface, said conical section being joined to said radiating element with said flat

radiating surface; fastening means on the rear of each radiator and fastened to said support, said fastening means being spaced from the radiating surface, and thermally insulating means rearwardly of the radiating elements and filling at least one of the spaces between said radiators and said support for preventing heat radiating backwards to said support, said thermal insulating means also filling the hollow interiors of the radiators and at least part of said hollow space between said conical section and said flat radiating surface; said support being a



housing having an open side adjacent which said front portions are located, and a closed side provided with a wall on which said rear portions are mounted, said conical section comprising reflecting means for reflecting, said substantially all heat emitted by the infrared radiators forward to heat a workpiece, said reflecting means cooperating with said radiating surface so that the heat is reflected substantially uniformly of the total surface of the workpiece, the rear of the radiating system above said support remaining cool, said radiators being mounted in close proximity adjacent to one another in a common housing.

4,331,879

PHOTOELECTRIC DEVICE FOR SENSING THE HEIGHT OF A PILE OF PAPER SHEETS

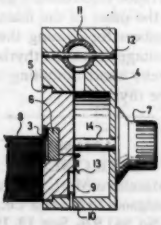
Bozislav Gersl, Sadova, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Czechoslovakia

Filed May 12, 1980, Ser. No. 149,023

Claims priority, application Czechoslovakia, May 12, 1979, 3250 79

Int. Cl.³ G01N *21/30*

U.S. Cl. 250—561 **12 Claims**



1. A photoelectric device for sensing the height of a pile of paper sheets on a delivery table, movable in the vertical direction, of a printing machine which comprises: a body, a photoelectric element having connectors and provided with a light transmitting sight opening, said photoelectric element being rigidly mounted in said body wherein said light transmitting opening of said photoelectric element is arranged to bear against a side of the pile of paper sheets.

4,331,880

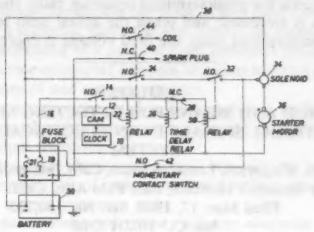
AUTOMATIC START/STOP APPARATUS FOR CYCLICAL ENGINE OPERATION

Donald C. Dittman, 5207 W. Cedar Bayou Lynchburg Rd.; Paul W. Kendrick, 922 W. Cedar Bayou Lynchburg Rd., and Leon J. Thibodeaux, 1619 Willow, all of Baytown, Tex. 77520

Filed Sep. 13, 1979, Ser. No. 75,259

Int. Cl.³ F02N *17/00*

U.S. Cl. 290—38 R **11 Claims**



1. Automatic control apparatus for cyclical engine operation, comprising;

first timer means including a normally open switch for applying power therethrough when said switch is closed, said switch being closed at predetermined clock intervals,

second timer means activated by said first timer means, and

solenoid means connected to said second timer means, the closing of said solenoid means applying starting power to the engine,

said second timer means deactivating after a predetermined time from being activated to open said solenoid means, and

said first timer means including;

a clock,

cam means operated by said clock including a second normally open switch, and a relay having a relay coil energized by the closing of said second normally open switch, the energization of said coil closing said first-named normally open switch at predetermined clock intervals.

4,331,881

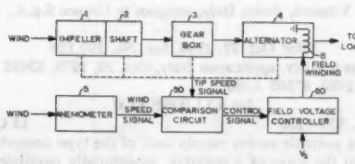
FIELD CONTROL FOR WIND-DRIVEN GENERATORS

Leo H. Soderholm, and James F. Andrew, both of Ames, Iowa, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 3, 1980, Ser. No. 193,877

Int. Cl.³ F03D *9/00*; H02P *9/14*

U.S. Cl. 290—44 **6 Claims**



1. A control device for operating a wind machine at maximum efficiency by maintaining a substantially constant, predetermined optimum tip speed/wind speed ratio wherein said wind machine is characterized by an impeller for extracting the wind energy and a generator for converting said energy to electricity, the apparatus comprising:

(a) means for providing a first input signal representing the velocity of the wind;

(b) means for providing a second input signal representing the tip speed of the impeller;

(c) a comparison circuit comprising a differential amplifier for comparing said first input signal with said second input signal and for generating an output signal responsive to said first and second input signals, wherein said output signal represents the field voltage that must be applied to the generator field winding to maintain said predetermined tip speed/wind speed ratio; and

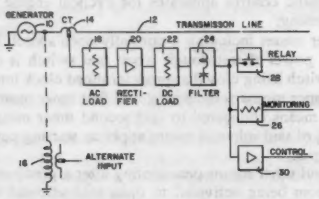
(d) means responsive to said output signal for applying the appropriate voltage to the generator field winding, whereby when the actual tip speed/wind speed ratio exceeds the predetermined optimum ratio, the field voltage is increased; and when the actual ratio is below the predetermined ratio, the field voltage is decreased.

4,331,882

METHOD AND MEANS FOR DETECTING SPURIOUS ELECTRICAL SIGNALS IN AN ELECTRICAL POWER SYSTEM

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 17, 1980, Ser. No. 130,733
Int. Cl.³ H02H 7/08
U.S. Cl. 307—129 **4 Claims**



1. In an electrical power system for transmitting electrical current at a constant frequency, apparatus for detecting the presence of a spurious electrical signal comprising means for generating a signal proportional to an electrical signal in said system; means for rectifying said generated signal thereby obtaining a rectified signal including a dc signal, the signal having a frequency equal to the difference in said constant frequency and the frequency of said spurious signal, and signals with frequencies at multiples of said difference; filter means for receiving and filtering said rectified signal to remove d.c. and frequencies at integer multiples of said constant frequency; and voltage detector means connected to said filter means for detecting the presence of said difference in said constant frequency and the frequency of said spurious signal, said detector means output is indicative of a spurious electrical signal.

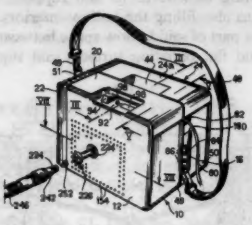
4,331,883

PORTABLE POWER SUPPLY UNIT

Alberto Vitaloni, Turin, Italy, assignor to Grenco S.p.A., Turin, Italy

Filed Oct. 22, 1980, Ser. No. 199,128
Claims priority, application Italy, Oct. 29, 1979, 53693 B/79; Apr. 2, 1980, 67505 A/80
Int. Cl.³ B25F 3/00
U.S. Cl. 307—150 **15 Claims**

1. In a portable power supply unit, of the type comprising a casing in the form of a portable, substantially parallelepiped box in which there are installed a transformer—rectifier combination and a low voltage d.c. electric motor which can be selectively supplied from a battery or from an a.c. mains network by means of the transformer—rectifier combination downstream from the rectifier there being further connected at least one socket for the distribution of low voltage d.c., electrical energy to external utilisers and for supplying the motor from the battery, and in which the shaft of the electric motor extends perpendicular to a side wall of the casing and has, at an end accessible through an opening of this wall, a power take-off connectable to a mechanical utiliser, there being associated with the unit a reciprocating pneumatic compressor which can be driven by the motor the improvement wherein the reciprocating pneumatic compressor is installed in the casing and the shaft of the compressor is mounted coaxially in the shaft of the



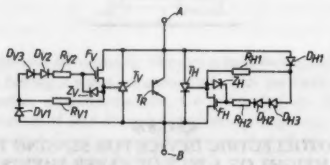
motor and is coupled to the shaft of the motor by means of a clutch there being provided means for disengaging the clutch to prevent the shaft of the compressor from being rotated by the shaft of the motor when a mechanical utiliser is coupled to the power take-off.

4,331,884

TWO-POLE OVERCURRENT PROTECTION DEVICE

Per Svedberg, Vällingby, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Mar. 19, 1980, Ser. No. 131,564
Claims priority, application Sweden, Apr. 3, 1979, 7902932
Int. Cl.³ H03K 17/72
U.S. Cl. 307—252 C **10 Claims**



1. A two-pole device for connection into a current-carrying conductor for protecting the conductor from an overcurrent condition, the device comprising: a normally conducting thyristor, and an MOS transistor integrated with the thyristor and connected in parallel with an emitter junction thereof adjacent one of two main thyristor electrodes, a gate of the MOS transistor connected to the other of the main electrodes through voltage sensing members for causing the MOS transistor to conduct when the voltage across the thyristor exceeds a predetermined level, thereby short circuiting the emitter junction and extinguishing the thyristor.

4,331,885

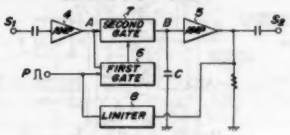
GATE CIRCUIT

Kiyoshi Amazawa; Masaharu Mori, and Takashi Taniyama, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 941,926, Sep. 13, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,774
Claims priority, application Japan, Sep. 24, 1977, 52/113933; Feb. 15, 1978, 53/16314; Apr. 21, 1978, 53/47226
Int. Cl.³ H03K 17/60; H03B 1/04
U.S. Cl. 307—254 **3 Claims**

1. A gate circuit comprising: a signal path in which an input signal having noise signal components is to be fed, said signal path extending between signal input and output terminals; first gate means normally in its off state; second gate means connected in series with said signal path and normally in its on

state to allow said signal applied to said signal path to pass therethrough, said first gate means being coupled to said second gate means so that the turning on of said first gate means will turn off said second gate means, said first and second gate means each being a current control device having a control terminal and a pair of load terminals where the current or voltage condition of the control terminal establish a low resistance conduction-on or high resistance conduction-off condition between the load terminals thereof, the load terminals of the device comprising said first gate means being coupled between the control terminal and the load terminal nearest said signal path input terminal of said second gate means so that the conduction-on condition of said first gate means will normally



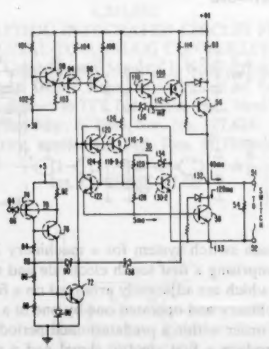
turn off conduction between the load terminals of said second gate means to open said signal path; means for providing a noise-indicating control signal occurring during the noise signal components of said input signal and feeding said control signal to the control terminal of said first gate means to turn it on, thereby allowing said second gate means to be cut off; and limiter means coupled to said load terminal nearest said input terminal of said second gate means and responsive to the potential of the latter load terminal for limiting the input potential of said second gate means to such level as to prevent said second gate means from turning on due to the variation of the input potential voltage when the second gate means is turned off by said first gate means.

4,331,886

CURRENT SWITCH DRIVING CIRCUIT ARRANGEMENTS

Fred A. Perner, San Jose, and Lionel D. Provazek, Campbell, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,293
Int. Cl.³ H03K *3/01, 3/26*
U.S. Cl. 307—270 **11 Claims**



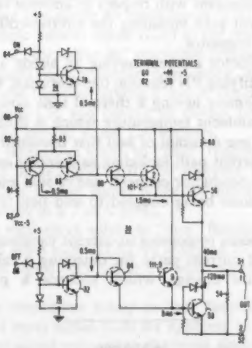
1. A current switch driving circuit arrangement comprising
input terminals at which a logical signal is to be applied,
output terminals,
an output current sinking transistor having emitter and collector electrodes individually connected to said output terminals and having a base electrode,
an output driving transistor having an emitter electrode connected to said collector electrode of said output sinking transistor, having a collector electrode and a base electrode,
a logical signal receiver circuit which comprises
one transistor having a base electrode coupled to said input terminals, having a collector electrode and having an emitter electrode,
another transistor having a base electrode connected to the emitter electrode of said one transistor, having a collector electrode and having an emitter electrode,
a signal receiver output transistor having a base electrode connected to the emitter electrode of said other transistor, having a collector electrode and having an emitter electrode connected to a point of fixed reference potential,
a diode device connected between said base and said emitter electrodes of said output transistor,
a pair of resistors connected in series between said emitter electrode of said first transistor and said base electrode of said output transistor,
a Schottky diode device connected between the junction between said pair of resistors and said collector electrode of said output transistor, and
a load resistor connected to the collector electrode of said other transistor and to said base electrode of said first transistor,
a constant current sourcing circuit connected to said signal receiver output circuit transistor collector electrode for current flow in the collector and emitter electrode path,
one current multiplying circuit connected between said current sourcing circuit and said base electrode of said output driving transistor, and
another current multiplying circuit coupled between the junction of said current sourcing circuit and said receiver circuit output transistor, and said base electrode of said output current sinking transistor.

4,331,887

CURRENT SWITCH DRIVING CIRCUIT ARRANGEMENTS

Dale K. Jadus, Putnam Valley, and Richard O. Seeger, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,294
Int. Cl.³ H03K *3/26*
U.S. Cl. 307—270 **4 Claims**



1. Current switch driving circuitry, comprising
one logical signal receiving circuit having an input terminal at which ON logical signal is applied and having an output terminal,
another logical signal receiving circuit having an input terminal at which OFF logical signal is applied and having an output terminal,
an output circuit comprising
a driving transistor and a sinking transistor having the col-

lector-emitter electron flow paths thereof connected in series and having output circuit input terminals individually connected to the base electrodes of said transistors, and

output terminals connected individually to the collector electrode and the emitter electrode of said sinking transistor,

current multiplying circuitry connected between said one logical signal receiving circuit and the base electrode of said driving transistor for actuating the latter during a desired time period,

current multiplying circuitry connected between said other logical signal receiving circuit and the base electrode of said sinking transistor for actuating the latter during another time period, and

a dissipating resistance element interposed in circuit with said collector electrode of said output driving transistor for protecting said transistors from excessive current flow in the event that both receiving circuits are at the DOWN logical level.

4,331,888

TEMPERATURE DETECTING APPARATUS

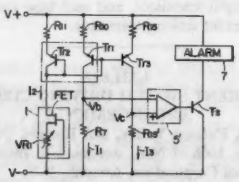
Yukio Yamauchi, Kawasaki, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Aug. 24, 1979, Ser. No. 69,405

Claims priority, application Japan, Feb. 6, 1979, 54-13424[U]; Aug. 24, 1979, 54-102329

Int. Cl.³ G01K *7/00;* H03K *3/26;* G01K *3/10*

U.S. Cl. 340—598 **20 Claims**



1. A temperature detecting apparatus, comprising: a first transistor having an emitter, base and collector and having a thermal time constant with respect to ambient temperature;

a first current path including the emitter-collector path of said first transistor;

a semi-conductor element having an anode and a cathode and a rectifying PN junction therebetween, said semi-conductor element having a thermal time constant with respect to ambient temperature which is differentfrom the thermal time constant of said first transistor;

a second current path including said anode and cathode of said semi-conductor element, one of said anode and cathode terminals being coupled to said first transistor base; and

detection means responsive to current variations in said first or second current paths for detecting a rate of ambient temperature change which exceeds a predetermined value.

4,331,889

CHARGE COUPLED DEVICE FOCAL PLANE INTEGRATER

William J. Parrish, Santa Barbara, Calif., assignor to Hughes Aircraft Co., Culver City, Calif.

Filed Jun. 3, 1980, Ser. No. 156,138

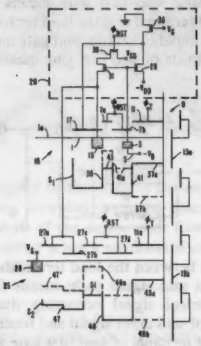
Int. Cl.³ H03K *3/42;* G11C *19/28;* H01L *29/78*

U.S. Cl. 307—311 **11 Claims**

1. In a charge transfer device focal plane array comprising a semiconductor substrate a photodetector generating a flow of charge in response to incident radiation, a device for measuring said charge flow during plural integration periods, comprising:

analog charge storing means having a finite charge storing capacity in said substrate for integrating the charge flow generated by said detector;

digital count charge storing means for storing a charge packet in said substrate representative of an accumulated count;



means for resetting the amount of charge stored in said analog storing means whenever said detector charge flow changes said amount by at least a selected fraction of said finite capacity; and

means for changing the quantity of charge stored by said digital storing means by a preselected quantum whenever said resetting means resets said analog storage means.

4,331,890

TOUCH SWITCH

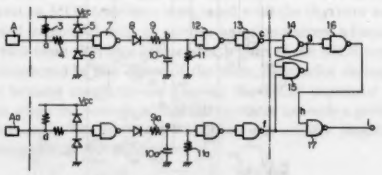
Yoshimitsu Makino, Hachioji, and Akira Orii, Sagamihara, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Dec. 6, 1979, Ser. No. 101,748

Claims priority, application Japan, Dec. 22, 1978, 53/158809

Int. Cl.³ H01H *36/00*

U.S. Cl. 307—326 **3 Claims**



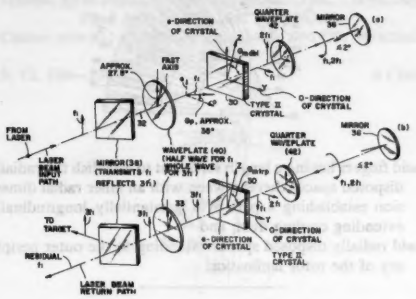
1. A touch switch system for a machinery having a drive motor, comprising a first touch electrode and a second touch electrode which are adjacently arranged on a furnishing panel of the machinery and operated one by one in a predetermined sequential order within a predetermined period of time difference to produce a first electric signal and a second electric signal; and electric circuit means including a first circuit associated with said first touch electrode and a second circuit associated with said second touch electrode for setting said predetermined period of time difference, said electric circuit means further including a circuit detecting said first and second electric signals produced in said predetermined period of time difference to produce an operating output for starting the drive motor.

4,331,891

HIGH POWER EFFICIENT FREQUENCY CONVERSION OF COHERENT RADIATION WITH NONLINEAR OPTICAL ELEMENTS

Joseph E. Rizzo, Pittsford, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed May 1, 1980, Ser. No. 145,410
Int. Cl.³ H03F 7/04
U.S. Cl. 307—427 12 Claims



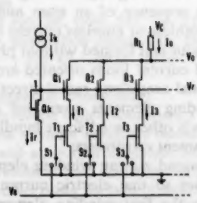
1. Apparatus for converting the frequency of a beam of coherent radiation which comprises a crystal having nonlinear optical coefficients, said crystal having opposite sides and ordinary and extraordinary polarization directions therein, means defining a double pass for said beam of radiation in opposite directions through said crystal between said opposite sides thereof, means for orienting the polarization of said beam as it propagates in the first of said opposite directions toward said crystal and the polarization directions of said crystal with respect to each other to obtain a first conversion of the frequency of said beam to provide the first and second frequency components therein, and means for orienting the polarization directions of said first and second frequency components and the polarization directions of said crystal with respect to each other as said beam propagates toward said crystal in the second of said opposite directions to obtain the combination of said first and second components into a third frequency component, said first, second and third frequency components being at different frequencies.

4,331,892

MONOLITHIC INTEGRATED CIRCUIT FOR A DIGITAL-TO-ANALOG CONVERTER

Leslie Miskin, Gundelfingen; Mauritz F. Schenstrom, Lahr-Langenwinkel, and Detlev Kunz, Freiburg, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,624
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2914108
Int. Cl.³ H03K 13/02
U.S. Cl. 307—448 2 Claims



1. A monolithic integrated circuit for a digital-to-analog converter, comprising a plurality of resistances connected in parallel, said resistance comprising a plurality of first enhancement mode insulated-gate field-effect transistors connected in parallel and having output currents, when operated in saturated condition, determined by a fixed ratio of channel width to channel length and source-drain currents controlled by a respective switching transistor comprising a second insulated-gate field-effect transistor, wherein

the channel of each of the first enhancement mode insulated-gate field-effect transistors and the channel of said respective switching transistor in series with each first enhancement-mode insulated-gate field-effect transistor are connected between output potential and ground potential, and

the gate electrodes of the first enhancement mode insulated gate field-effect transistors are connected to the gate and drain electrodes of an additional enhancement-mode insulated-gate field-effect transistor whose channel is connected between a constant current source and ground potential, and

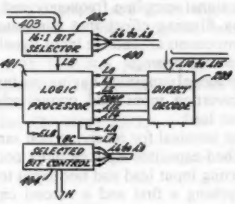
the channel width to channel length ratio of said additional enhancement mode insulated gate field effect transistor is equal to that of the first enhancement mode insulated gate field-effect transistor having the smallest channel width to channel length ratio.

4,331,893

BOOLEAN LOGIC PROCESSOR WITHOUT ACCUMULATOR OUTPUT FEEDBACK

John P. Conners, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Division of Ser. No. 426,277, Sep. 24, 1976, Pat. No. 4,212,076. This application Nov. 28, 1979, Ser. No. 97,689
Int. Cl.³ H03K 19/20
U.S. Cl. 307—465 6 Claims



1. A clocked accumulating logic processor without feedback and responsive to a single bit input signal (LB) for converting a single bit logic answer signal (LA) to the result of a "load", "and", "or" or "exclusive or" operation represented by function code signals, said processor comprising, in combination:

(a) a JK type flip-flop having J and K control terminals, a clock input CP, and having an output terminal Q upon which the answer signal LA appears,

(b) means responsive solely to "load" function code signals and said input signal (LB) for applying to said J or K terminals a 1 level signal when the input signal (LB) is respectively at a 1 or 0 level,

(c) means responsive solely to "and" function code signals and said input signal (LB) for applying to said K terminal a 1 level signal only when the input signal (LB) is at a 0 level,

(d) means responsive solely to "or" function code signals and said input signal (LB) for applying to said J terminal a 1 level signal only when the input signal (LB) is at a 1 level,

(e) means responsive solely to "exclusive or" function code signals and said input signal (LB) for applying to both said J and K terminals a 1 level signal only when said input signal (LB) is at a 1 level,

said means (b)–(e) including means for applying 0 level signals to said J and K terminals except in the cases specified above, and

(f) means for applying a pulse to said clock input after any of

said means (b)–(e) has applied the respectively specified 1 level signals,

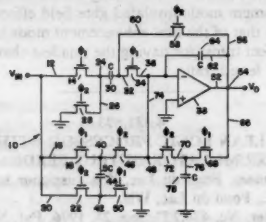
whereby said answer signal (IA) takes on a new bistate value LA_n respectively according to the Boolean functions $LA_n=LB$, $LA_n=LA_o \cdot LB$, $LA_n=LA_o+LB$, or $LA_n=LA_o \oplus LB$ despite the fact that said signal LA_o does not participate in the operation of said means (b)–(e).

4,331,894

SWITCHED-CAPACITOR INTERPOLATION FILTER

Roubik Gregorian, Santa Clara, Calif., and Toshiro Suzuki, Tokyo, Japan, assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed May 29, 1980, Ser. No. 154,574
Int. Cl.³ H03H *11/00*; H03F *1/34*
U.S. Cl. 307—520 **9 Claims**



1. An interpolation circuit for receiving a sampled input signal and producing an output signal that is sampled at twice the input signal sampling frequency and thereby providing a smoothing filtering effect that eliminates extraneous output signal components around the input signal sampling frequency, said circuit comprising:

an operational amplifier having an inverting input lead, a noninverting input lead connected to ground, and an output lead;

an input terminal for receiving said sampled input signal;

a switched-capacitor input network connected between said inverting input lead and said input terminal, said network comprising a first and a second capacitor, said second capacitor having a predetermined fractional capacitance of said first capacitor; a first switch means connecting said first capacitor between said inverting input lead and said input terminal; a second switch means connecting said second capacitor between said inverting input lead and said input terminal, and a first clock and a second clock for controlling said first and said second switch means; and

feedback means connected between said output lead and said inverting input lead, said feedback means cooperating with said input network to provide a sampled output signal at double the input signal sampling frequency and wherein every second output signal sample is equal to the input signal sample, and every other output signal sample is equal to a value interpolated from two adjacent input signal samples.

4,331,895

DUCTED ROTOR AND LAMINATION WITH DEEP RADIAL PASSAGEWAY

John D. Edick, Wickliffe, and Paul K. Doering, Massillon, both of Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

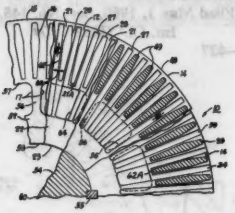
Filed May 18, 1979, Ser. No. 40,134
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—61 **25 Claims**

1. A lamination for use in a dynamoelectric machine squirrel cage rotor, comprising in combination,

a core portion having a central shaft aperture therein,

a plurality of fingers extending generally radially from said core portion and establishing generally radially disposed spaces therebetween,

a rotor bar aperture in the outer end of a majority of said fingers;



said fingers having a length sufficient to establish the radially disposed spaces therebetween with an inner radial dimension establishing a part of a substantially longitudinally extending cooling duct; and

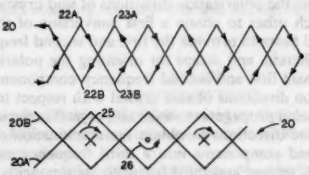
said radially disposed spaces extending to the outer periphery of the rotor lamination.

4,331,896

ZIG-ZAG WINDINGS, WINDING MACHINE, AND METHOD

Richard D. Sedgewick, 100 Horne St., Dover, N.H. 03820

Filed Oct. 20, 1980, Ser. No. 198,928
Int. Cl.³ H02K *3/04*
U.S. Cl. 310—179 **20 Claims**



1. A new and improved multipole stator winding for use in motors and sensors comprising:

a first annular multi-turn filament bundle zig-zag winding element having a plurality of troughs and peaks forming alternate first halves of adjacent current loops;

a second annular multi-turn filament bundle zig-zag winding element similar in form to the first winding element but offset from the first winding element so that troughs of the second zig-zag winding element are approximately aligned with peaks of the first zig-zag winding element to provide the alternate second halves of adjacent current loops;

said first and second zig-zag winding elements together comprising a sequence of an even number of adjacent equivalent toothless or coreless current loops arranged in a ring or annulus and formed without proximity to stacks or cores, said current loops oriented around the annulus with orthogonal axes along radial directions of the annulus, said winding elements assembled and arranged to cross over each other as adjacent bundles rather than as individual filament crossovers;

said first and second zig-zag winding elements electrically joined together so that electric current passing in one direction into the first winding element returns in the opposite direction in the second winding element thereby generating magnetic fields or poles of alternately opposite polarity at each of the current loops along radial directions of the ring or annulus;

said first and second zig-zag winding elements and ring of current loops comprising a single phase multi-pole winding independent of ferromagnetic materials.

4,331,897

COMMUTATOR APPARATUS FOR ROTARY ELECTRIC MACHINE

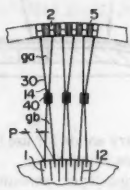
Tadashi Sonobe, Iwaki; Mitsuhiro Nitobe; Shinzi Saruwatari, both of Hitachi; Sueo Kawai, and Toshio Hattori, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,490

Claims priority, application Japan, Apr. 9, 1979, 54/42065

Int. Cl.³ H02K *5/24*

U.S. Cl. 310—234 **8 Claims**



1. A commutator apparatus for a rotary electric machine comprising:

a commutator disposed on a circumferential surface of a rotary shaft through an insulation ring, said commutator includng a plurality of commutator segments and a plurality of insulator segments arranged alternately with each other in a circumferential direction of the rotary shaft;

a plurality of risers each secured to the outer end of a corresponding one of said commutator segments and extending longitudinally in a radial direction of said rotary shaft;

an armature winding having a plurality of armature coils each disposed through a spacer segment in the circumferential direction of said rotary shaft, said armature coils being coupled to the outer ends of said risers respectively; and

a plurality of insulating binders for bindng respective pairs of adjacent two risers in such a manner as to make the distance between each pair of said adjacent two risers at the bound portions thereof smaller than the distance between said pair of said adjacent two risers at the ends thereof, thus forming two substantially delta-shaped spaces formed by the bound adjacent two risers on both sides of each of said binders.

4,331,898

IMAGE INTENSIFIER WITH TWO-LAYER INPUT WINDOW

Tatuo Shimizu, Kawasaki; Hisao Ishiwata, Kamakura; Tetsu Sano, Tokyo, and Yoshimitsu Aramaki, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 18, 1980, Ser. No. 113,193

Claims priority, application Japan, Jan. 24, 1979, 54-6123

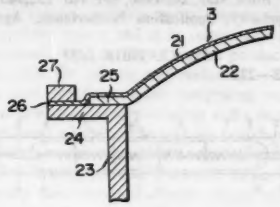
Int. Cl.³ H01J *35/00*

U.S. Cl. 313—59 **10 Claims**

1. An image intensifier comprising:

an evacuated envelope which comprises a cylindrical vessel;

an input window member airtightly sealed to one one end of said vessel, and an output container formed at the other end of said vessel, at least said one end portion of the said cylindrical vessel being formed of metal so that said input window member has a multilayer structure including an outer thin plate, not of aluminum or an aluminum alloy, and formed of metal weldable to the metal which constitutes at least said one end portion of said cylindrical vessel and an inner thin plate formed of aluminum or aluminum alloy which is thicker than said outer thin plate, the peripheral portion of said inner thin plate being held to an inner portion of a flange at said one end portion of said cylindrical vessel, and the peripheral portion of said outer



thin plate being held to an inner portion of a flange at said one end portion of said cylindrical vessel, and the peripheral portion of said outer thin plate extending beyone the peripheral portion of said inner thin plate and being fused with an outer portion of said flange.

4,331,899

SPARK PLUG

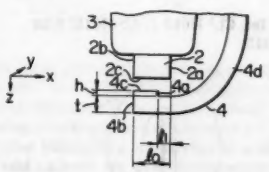
Minoru Nishida; Tadashi Hattori, and Akira Tanaka, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 22, 1980, Ser. No. 123,819

Claims priority, application Japan, Mar. 9, 1979, 54-28002; Mar. 15, 1979, 54-30803

Int. Cl.³ H01T *13/32*

U.S. Cl. 313—141 **7 Claims**



1. A spark plug comprising:

a metal plug shell;

an insulator fixed to an inner side of said plug shell;

a center electrode fixed to a leg portion of said insulator exposed into a combustion chamber of an engine; and

a ground electrode fixed to said plug shell and including a bent portion such that a forward end of said ground electrode opposes a forward end face of said center electrode whereby an electric discharge may be produced between said center electrode and said ground electrode;

wherein the end face of said center electrode has a first side face portion near said bent portion and a second side face portion remote from said bent portion, and

wherein said ground electrode forward end is formed with projection means including a ground electrode discharging surface opposing said second side face portion of said center electrode but not opposing said first side face portion.

4,331,900

HALOGEN INCANDESCENT LAMP

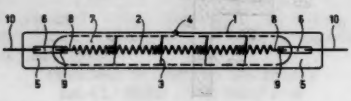
Victor R. Notelteirs, and Gustaaf F. R. Sisens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,943

Claims priority, application Netherlands, Apr. 11, 1979, 7902839

Int. Cl.³ H01K *1/28*

U.S. Cl. 313—222 1 Claim



1. A line voltage halogen incandescent lamp having a tubular, quartz glass lamp envelope which is filled with an inert gas containing hydrogen bromide, a tungsten filament disposed axially in said envelope and two metal foils, said lamp envelope being sealed in a vacuum-tight manner at each end by means of a respective pinch around one of said metal foils to define a cavity within said envelope between said pinches, said lamp also including a respective external and a respective internal current conductor for the filament, each being welded to one of said foils, each of said internal current conductors being welded to said foils in said cavity, said internal current conductors being disposed entirely within said cavity formed by the lamp envelope and said metal foils each extending beyond the associated pinch to an internal current conductor.

4,331,901

ELECTRIC INCANDESCENT LAMP

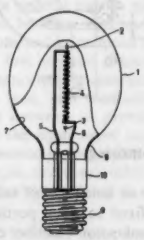
Bertus de Vrijer; Leonard C. H. Eijkelenboom, and Jan de Ridder, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 139,943

Claims priority, application Netherlands, Feb. 26, 1979, 7901482

Int. Cl.³ H01J *1/42;* H01K *9/08*

U.S. Cl. 313—315 2 Claims



1. An electric incandescent lamp in which a filament is accommodated in a sealed vacuum-tight lamp envelope which substantially has the shape of a prolate ellipsoid of revolution and the wall of which is coated with a visible-light pervious, infrared-radiation-reflecting filter, characterized in that the filament is a straight cylindrical body of helically-wound wire which is accommodated with its axis extending between the foci of the ellipsoid of revolution and said body is symmetrically disposed with respect to said foci, the distance between focal points being 1 to 2 times the axial length of the cylindrical filament.

4,331,902

LAMINATED ROTARY ANODE FOR X-RAY TUBE

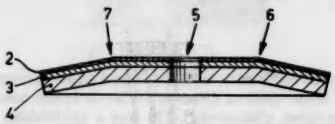
Frederik Magendans, and Bernhard J. P. Van Rheenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 907,991, May 22, 1978, Pat. No. 4,224,273, which is a continuation of Ser. No. 621,484, Oct. 10, 1975, abandoned, which is a continuation of Ser. No. 418,581, Nov. 23, 1973, abandoned. This application Mar. 10, 1980, Ser. No. 129,134

Claims priority, application Netherlands, Dec. 7, 1972, 7216588

Int. Cl.³ H01J *35/08*

U.S. Cl. 313—330 2 Claims



1. A laminated rotary anode for use in an X-ray tube having an electron target area, comprising:

(a) an electron target layer consisting essentially of a first tungsten alloy;

(b) a second layer bonded at a first face to said target layer and consisting essentially of one of tungsten and a second alloy of tungsten, said second layer material having a yield point lower than that of said first tungsten alloy; and

(c) a support layer bonded to said second layer at a second face opposite to said target layer, said support layer consisting essentially of one of molybdenum and a molybdenum alloy.

4,331,903

COLOR PICTURE TUBE AND METHOD FOR MAGNETICALLY ADJUSTING THE COLOR PICTURE TUBE

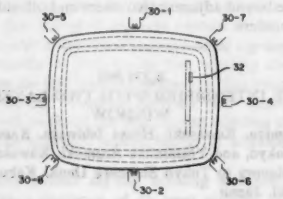
Shigeo Takenaka, and Hisafumi Okada, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 19, 1979, Ser. No. 95,305

Claims priority, application Japan, Nov. 21, 1978, 53-142824

Int. Cl.³ H01J *29/06*

U.S. Cl. 313—413 11 Claims



1. A colour picture tube comprising:

a vacuum tube envelope having a face plate, a funnel section, a yoke section and a neck;

a phosphor layer of phosphor patterns regularly arrayed on the inner surface of the face plate;

a shadow mask faced to said inner surface of the face plate and having a plurality of apertures corresponding to said phosphor patterns;

an electron gun assembly disposed in the neck for emitting electron beams to pass through said aperture of said shadow mask and impinge on the phosphor patterns on the face plate;

a deflection yoke disposed on the yoke section for deflecting

electron beams emitted from said electron gun assembly; and

a magnetized permanent magnetic means for fine adjusting the trajectory of the electron beams located along the inner surface of said tube envelope along the electron beam path deflected by said deflection yoke.

4,331,904

COLOR TELEVISION DISPLAY TUBE

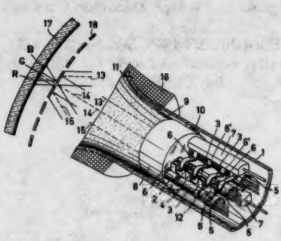
Johannes H. M. Johanns, and Arnoldus H. M. van Eck, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,842

Claims priority, application Netherlands, Mar. 20, 1979, 7902159

Int. Cl.³ H01J *29/02, 29/50*

U.S. Cl. 313—417 **1 Claim**



1. An electron gun system for a color television display tube, comprising three electron guns arranged in-line to generate three converging electron beams, each electron gun including a triode part, an elongate first lens electrode and a second lens electrode, said elongate first lens electrodes being secured to insulating rods by means of axially-spaced suspension braces,

wherein the elongate first lens electrodes of the two outer electron guns are each secured by a first suspension brace nearer to the respective triode part and by a second suspension brace nearer to the second lens electrode, said first suspension brace being attached to the side of the electrode remote from the central electron gun and said second suspension brace being attached to the side of the electrode facing the central electron gun.

4,331,905

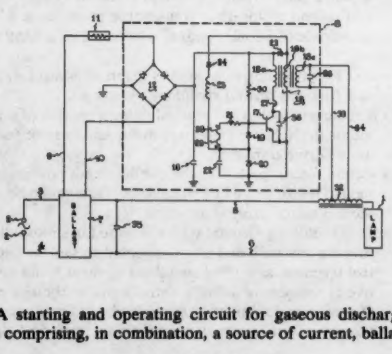
STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

Daniel V. Owen, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1980, Ser. No. 201,013

Int. Cl.³ H05B *41/14*

U.S. Cl. 315—225 **5 Claims**



1. A starting and operating circuit for gaseous discharge lamps comprising, in combination, a source of current, ballast means connected at its input side to said current source, discharge lamp means connected to the output side of said ballast means, first transformer means connected in series between said discharge lamp means and said ballast means, whereby said first transformer means senses flow of current to said discharge lamp means, oscillator means connected at its input side to said current source and at its output side to said first transformer means, said oscillator means producing a high voltage sine wave for starting and restarting said discharge lamp means, said oscillator means comprising second transformer means having a primary winding and a demagnetizing winding, and being connected to said fist transformer means, controlled switch means connected to said primary winding, and means for turning off said oscillator means comprising series-connected unidirectional current means and low pass filter means connected at one side to said controlled switch means and at the other side to said second transformer means.

4,331,906

CATHODE RAY TUBE APPARATUS

Junichi Fujino; Hideto Miyazaki, and Shigeki Ikehata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

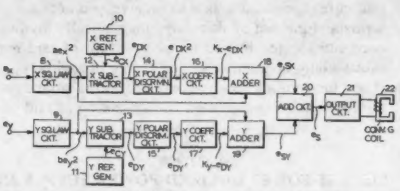
PCT No. PCT/JP79/00006, § 371 Date Aug. 24, 1979, § 102(e) Date Aug. 24, 1979, PCT Pub. No. WO80/00518, PCT Pub. Date Mar. 20, 1980

PCT Filed Jan. 11, 1979, Ser. No. 199,785

Claims priority, application Japan, Aug. 31, 1978, 53-107119

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—368 **3 Claims**

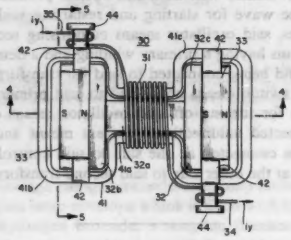


1. A cathode ray tube apparatus having a shadowmask color cathode ray tube having a plurality of electron guns and means for deflecting electron beams in said cathode ray tube in a direction of an X axis and in a direction of a Y axis and constructed so that information is displayed in color on a display surface of said cathode ray tube characterized by a convergence correction circuit including a first and a second square law circuit making said X axis deflecting signal e_X and a Y axis deflecting signal e_Y square waveform signals ae_X^2 and be_Y^2 multiplied by predetermined coefficients a and b, respectively, reference signal generation circuits for generating reference signals e_{CX} and e_{CY}, subtraction circuits for providing differences between said square waveform signal ae_X^2, be_Y^2 and said reference signals e_{CS}, c_{CY}, polarity discrimination circuits for discriminating the polarity of output signals e_{DX} and e_{DY} from said subtraction circuits and outputting signals which are $e_{DX} \geqq 0$ and $e_{DY} \geqq 0$, coefficient circuits for multiplying the output signals e_{DX}' and e_{DY}' from said polarity discrimination circuits by predetermined coefficients K_X and K_Y, first addition circuits for adding output signals $K_X \cdot e_{DX}'$ and $K_Y \cdot e_{DY}'$ from said coefficient circuits to said square waveform signals ae_X^2 and be_Y^2, a second addition circuit for adding output signals e_{SX} and e_{SY} from said first addition circuits, and an output circuit driven with an output signal e_S from said second addition circuit to pass a deflecting current corresponding to said signal e_S through said deflecting means.

4,331,907
DEFLECTION CIRCUIT LINEARITY COIL

David E. Laux, and Kenneth E. Meyer, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,522
Int. Cl.³ H01J 29/70; H01H 7/02
U.S. Cl. 315—400 18 Claims



13. In a horizontal deflection circuit with a horizontal deflection generator generating horizontal scanning current in a horizontal deflection winding during a horizontal scanning interval; a linearity reactor with a reactor winding coupled to said horizontal deflection winding, the inductance of which reactor varies during the horizontal scanning interval in a manner that provides linearity correction to said horizontal scanning current, said reactor comprising:

a core of magnetizable material having a generally rectangularly shaped center section widening to form a generally rectangularly shaped end flange at each end thereof,

a housing with walls generally conforming to the shape of said core, open at one side to receive said core,

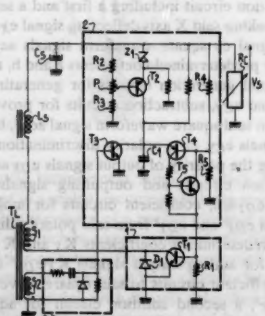
a permanent magnet of slab shape magnetically biasing said core and located in said housing, a face of said magnet substantially contacting an end flange of said core,

said reactor winding having conductor turns wound around said core housing over said center section of said core.

4,331,908
CIRCUIT FOR STABILIZED POWER SUPPLY IN CONJUNCTION WITH THE HORIZONTAL SCANNING CIRCUIT OF A VIDEO-FREQUENCY RECEIVER

Gérard Rilly, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Jul. 20, 1979, Ser. No. 58,978
Claims priority, application France, Jul. 25, 1978, 78 21270
Int. Cl.³ H01J 29/70
U.S. Cl. 315—411 8 Claims



1. A stabilized auxiliary power supply circuit comprising, connected in series in a loop, an active switch chopper,

a secondary winding of a television receiver line transformer which delivers the line retrace signal,

said winding being the exclusive source of power for said supply circuit,

an induction coil,

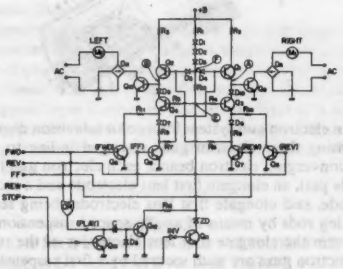
a capacator having a sufficiently high capacatence to ensure that the alternating current voltage across the terminals of said capacator is negligible;

and connected to said loop between said transformer and across said capacator, and to said active switch chopper, a control circuit synchronized with the line frequency and controlling the conduction of said active switch chopper.

4,331,909
CONTROL CIRCUIT FOR A REEL MOTOR DRIVING CIRCUIT

Yoshimitsu Sunaga, and Satoru Honda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 168,929
Claims priority, application Japan, Jul. 13, 1979, 54/88188
Int. Cl.³ B65H 59/38
U.S. Cl. 318—6 3 Claims



1. A control circuit for a reel motor driving circuit for use in a tape recorder having first and second motors, said first and second motors being capable of rotating first and second tape reels, respectively, in take-up directions, comprising:

a first motor drive transistor (Q_9) connected to the first motor;

a second motor drive transistor (Q_{10}) connected to the second motor;

a first switching element (Q_1) having a first control terminal and providing a first motor drive bias signal to the base of said first motor drive transistor in accordance with the magnitude of a control signal at said first control terminal;

a second switching element (Q_2) having a second control terminal and providing a second motor drive bias signal to said second motor drive transistor in accordance with the magnitude of a control signal at said second control terminal;

means for providing substantially identical control signals to said first and second switching elements;

a first current path (Q_3) for conducting a portion of said first motor drive bias signal away from said base of said first motor drive transistor;

a second circuit path (Q_4) for conducting a portion of said second motor drive bias signal away from said base of said second motor drive transistor;

a third switching element (Q_7) connected in series with said first current path and also connected to said second control terminal, said third switching element being conductive in response to a third control signal to thereby reduce the bias signal supplied to the base of said first motor drive transistor and to simultaneously alter said first control

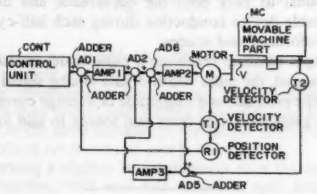
signal to increase the bias signal supplied to the base of said second motor drive transistor; and

a fourth switching element (Q_8) connected in series with said second current path and also connected to said first control terminal, said fourth switching element being conductive in response to a fourth control signal to thereby decrease the bias signal provided to the base of said second motor drive transistor and to simultaneously alter said first control signal to increase the bias signal provided to the base of said first motor drive transistor.

4,331,910
POSITIONING CONTROL SYSTEM

Yoshinori Kohzai; Hidetsugu Komiya, both of Hino; Yoichi Amemiya, Hachioji; Yo Ikebe, and Jun Ikebe, both of Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 118,227
Int. Cl.³ G05B 5/01
U.S. Cl. 318—618 **9 Claims**



1. A control system for positioning a movable machine part that is connected to a motor in a numerically controlled machine, by feedback within said system of selected positional information of said motor or said machine part, and of information of the velocity of the motor, said control system receiving commanded positional information to operate said system to drive said motor to control the machine part, said control system comprising

means for detecting said velocity information of said motor,

means for providing said selected positional information,

means for providing information corresponding to the velocity of the machine part, and

first difference means for outputting the difference between said velocity information of the machine part and said detected motor velocity information for said feedback.

4,331,911
METHOD OF EQUALIZING THE VOLTAGES OF THE INDIVIDUAL CELLS OF STORAGE BATTERIES

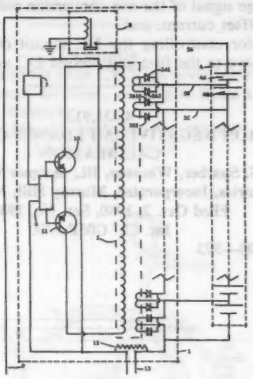
Robert H. Park, 1510 W. Demeter Dr., Freeport, Ill. 61032

Continuation-in-part of Ser. No. 908,447, May 22, 1978. This application Feb. 17, 1981, Ser. No. 234,884
Int. Cl.³ H02J 7/08
U.S. Cl. 320—14 **2 Claims**

1. The method of equalizing the voltages of the individual cells of a storage battery which consists in the steps of,

1. providing a single input type of d.c. to d.c. converter incorporating output circuits equal in number to the number of cells of the battery to which it is planned that the converter will make connection, with the converter so designed and employed that, with its input circuit connected to the terminals of that battery, and one of each of its output circuits connected across one of each of the cells of the battery, flow of cell equalizing current will hold low so long as the downward departures of the voltages of the cells from average cell voltage hold below a prescribed index value.

2. providing via method of converter design and employment, and choice of the above referred to index value, so that, for a given type, size, and prior condition of use of the battery, employment of the battery as set forth in step (1) above can be expected to provide a cost-effective way to both favorably affect the equality of the battery's cell voltages, and avoid cell reversal during discharge under contemplated conditions of the battery's use,



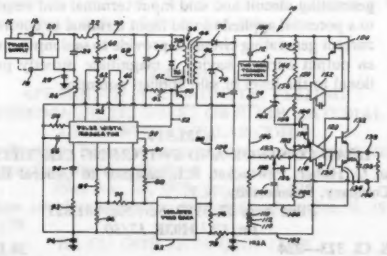
3. providing to connect one of each of the output circuits of the converter across one of each of the individual cells of the battery,

4. providing so that when the battery is in active use the input circuit of the converter will be energized from the battery's terminals.

4,331,912
CIRCUIT FOR CONVERTING A NON-LIVE ZERO CURRENT SIGNAL TO A LIVE ZERO DC OUTPUT SIGNAL

James R. Ruesch, Boulder, Colo., and Charles E. Goetzinger, Bloomington, Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 6, 1980, Ser. No. 194,083
Int. Cl.³ G05F 1/46
U.S. Cl. 323—271 **13 Claims**



1. Apparatus coupled to an external power supply and coupled to a two wire DC current transmitter providing a transmitter circuit current signal ranging between a base value and a normal maximum value, for converting such signal to a DC circuit output current signal coupled through an external load wherein a zero DC circuit output current is equivalent to the base value and having:

first current-to-voltage conversion means coupled to the transmitter for receiving the transmitter circuit current signal therefrom and for converting said transmitter circuit current signal to a first DC voltage signals as a function of said transmitter circuit current signal;

second current-to-voltage conversion means coupled to receive the DC circuit output current for converting said

DC circuit output current to a second DC voltage signal as a function of said DC circuit output current;

current source means providing an offset current;

means to connect the current source means with one of the current-to-voltage conversion means, whereby the DC voltage signal of the one conversion means is affected by the offset current; and

means for controlling the DC circuit output current responsive to the first and second DC voltage signals.

4,331,913

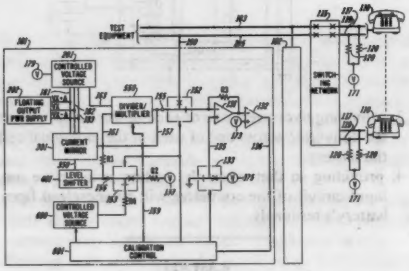
PRECISION NEGATIVE IMPEDANCE CIRCUIT WITH CALIBRATION

Richard G. Sparber, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 2, 1980, Ser. No. 193,366

Int. Cl.³ G05F *5/00*

U.S. Cl. 323—303 **19 Claims**



1. A negative impedance circuit having an input terminal (155) connectible between a source of potential and an electrical load connected to said source, characterized in that said circuit comprises:

a controllable current generating circuit (301) connected to said input terminal for providing an output current to said input terminal;

a current control circuit (401) connected to said current generating circuit and said input terminal and responsive to a potential applied to said input terminal to control said current generating circuit to provide to said input terminal an output current having a magnitude directly proportional to the level of said applied potential.

4,331,914

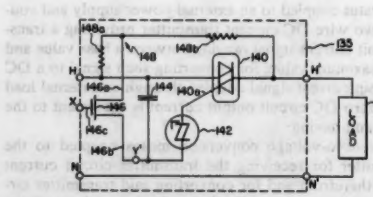
LOAD CONTROL AND SWITCHING CIRCUITS

Paul G. Huber, Pawtucket, R.I., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,811

Int. Cl.³ H03K *17/30*

U.S. Cl. 323—324 **18 Claims**



1. A circuit for selectably connecting a power-consuming load to an A.C. source and for variably controlling load power consumption responsive to an externally-provided control signal, comprising:

first and second circuit terminals each for connection respectively to said source and said load;

a single input terminal for receiving said externally-provided control signal;

a gateable device having a gate electrode and a main circuit connected between said first and second terminals and having current conduction therethrough initiated responsive to a gating signal at said gate electrode;

a triggering device having a first terminal connected to said gateable device gate electrode at another terminal, and providing said gating signal at said gate electrode responsive to a voltage of a predetermined magnitude at said another terminal; and

means connected to said input terminal, and including an energy-storage element connected between said trigger element another terminal and said first circuit terminal, for providing said voltage to said triggering device another electrode responsive to the control signal at said input terminal to vary both the occurrence and duration of gateable device conduction during each half-cycle of the waveform of said source;

said input terminal receiving a pulse-width-modulated analog signal, the pulse width of said analog signal determining the presence and magnitude of average current flow to said gateable device from said source to said load.

4,331,915

DETECTION OF TAMPERING OF KILOWATT-HOUR METERS FOR MEASURING ELECTRICAL ENERGY CONSUMPTION

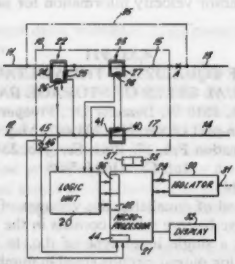
John S. Fielden, Ottery St. Mary, England, assignor to South Eastern Electricity Board, England

Filed Jan. 7, 1980, Ser. No. 110,026

Claims priority, application United Kingdom, Jan. 11, 1979, 7901132

Int. Cl.³ G01R *11/24, 1/20*

U.S. Cl. 324—110 **12 Claims**

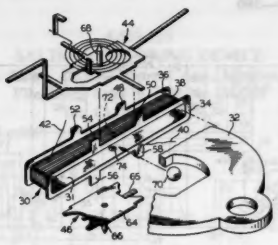


1. A kilowatt-hour meter for measuring consumption of electrical energy from an alternating supply having a live lead and a neutral or other return lead, which meter comprises a housing containing electrical energy consumption measuring means, a voltage transformer adapted to be energised from said alternating supply, which transformer is coupled to the live lead within the housing in such a sense as to induce in the live lead a small voltage in phase opposition to the input from the supply on that lead and means for indicating if a current flows in the live lead in phase opposition to the supply voltage on that lead.

4,331,916
METER MOVEMENT HAVING REINFORCED ARMATURE ASSEMBLY

Edward F. Scannell, Saugus, and William J. Schultz, Lynnfield, both of Mass., assignors to General Electric Co., Syracuse, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,823
Int. Cl.³ G01R *1/16, 1/00*
U.S. Cl. 324—151 R **4 Claims**



1. An armature assembly in a D'Arsonval movement measuring instrument comprising:

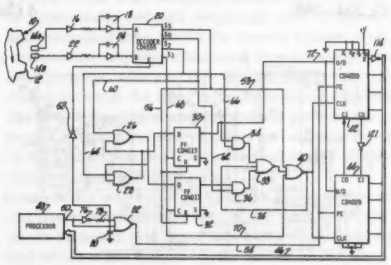
an open rectangular bobbin having a substantially longer length than width, said bobbin having detent holes centered in the inner surfaces of the longer length and along the axis of revolution of said bobbin; and

a ball having a slightly larger diameter than the opening of said bobbin, with said ball seated in said detent holes whereby the deformation of said bobbin is lessened under impacting received by said measuring instrument.

4,331,917
SPEED AND DIRECTION SENSING CIRCUIT

Michael L. Render, Peoria, and John T. Armstrong, Jr., Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01088, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979
PCT Filed Dec. 13, 1979, Ser. No. 145,066
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—166 **10 Claims**



10. In a system of the type which detects dynamic operating conditions as a result of the generation of a complete sequence of discrete signal quantities (S0, S1, S2, S3) representing continuous motion of a part (10) in a given direction, and having means (14, 16, 18, 20) for generating the sequence of signal quantities, the improvement which comprises:

an up/down counter (42, 44) having a count direction input (U/D) and count increment input (CLK);

first logic means (26, 28, 30) connecting one of the signal quantities to the count direction input to condition the counter to increment in a given direction only upon the subsequent occurrence of count increment input; and

second logic means (34, 36, 38, 40) connecting another of the signal quantities to the count increment input;

said first and second logic means in combination with said counter being operative to vary the direction of the count according to the order in which said one and another signals occur.

4,331,918
SPEEDOMETER FOR CYCLES AND MOPEDS

Poul Dunch, Korsoer, Denmark, assignor to Basta Laasefabrik A/S, Korsoer, Denmark

Filed May 21, 1980, Ser. No. 152,049
Int. Cl.³ G01P *3/48*
U.S. Cl. 324—174 **5 Claims**

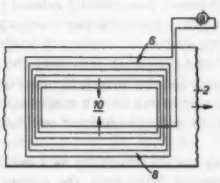
1. A sensor assembly for a speedometer, the assembly including a reed switch, means for mounting the reed switch on a stationary part of a spoked wheel vehicle adjacent to the spokes of a wheel thereof, a plurality of permanent magnets, and means for attaching the permanent magnets to spokes of the wheel so as to move past the reed switch when the wheel rotates, the improvement wherein:

said means for attaching the permanent magnets to spokes of a wheel comprises a non-magnetic annular holder having the permanent magnets embedded therein at equally spaced angular intervals and means for securing the annular holder concentrically with the axis of wheel rotation against the spokes of a wheel on the side adjacent to the mounting location of the reed switch.

4,331,919
APPARATUS FOR MAGNETIC TESTING FERROMAGNETIC SHEET OR STRIP MATERIAL USING RECTANGULAR COILS

Philip Beckley, Newport, England, assignor to British Steel Corporation, Croydon, England

Filed Aug. 28, 1979, Ser. No. 70,525
Claims priority, application United Kingdom, Sep. 8, 1978, 36146/78
Int. Cl.³ G01R *33/14;* G01N *27/82*
U.S. Cl. 324—222 **9 Claims**



1. Apparatus for measuring power losses in electrical steel strip including a magnetising system comprising spaced arrays

of substantially parallel rectilinear conductors supported adjacent the plane of the strip and mounted for rotation about an axis normal thereto, means for energising the conductors to a known degree, the conductors being so disposed that the fluxes generated in the strip by the arrays are opposed and are projected normally of the strip between said arrays whereby to effect uniform linear magnetisation of the strip, and sensor means for measuring the intensity of said fluxes generated in the strip in response to said energisation.

4,331,920

MAGNETIC OR MAGNETO-INDUCTIVE MATERIALS TESTER WITH IMPROVED PROCESSING CIRCUIT

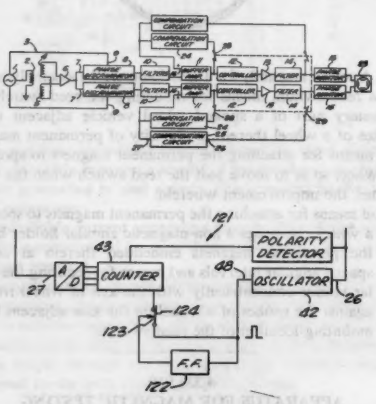
Alfons Kalisch, Reutlingen, and Günther Stritzke, Gomaringen, both of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Förster Prüfgerätebau, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,547

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825958

Int. Cl.³ G01N *27/72*; G01R *33/12*; H03K *17/00*; H03B *1/00*

U.S. Cl. 324—225 **5 Claims**



1. In a material tester having probes which, when brought into contact with the material, produce an electrical signal corresponding to certain predetermined properties of the material, means for evaluating the signal of the probes and a compensating circuit which produces a compensation voltage to eliminate certain error voltages superimposed on the signal of the probes, said compensating circuit including a voltage-sensitive oscillator driven by the error voltages and providing a signal of a frequency functionally related to the magnitude of the error voltages, a pulse counter connected to the oscillator, a digital/analog converter connected to the pulse counter and the output of said converter providing the compensation voltage to the means for evaluating, the improvement comprising:

electrically responsive switch means serially interconnected between the voltage-sensitive oscillator and the counter; and

a time delay means driven by said oscillator and having a predetermined delay time, the output of said time delay means being connected to said switch means to interrupt counting when the delay time is exceeded by the pulse repetition period of the oscillator voltage.

4,331,921

TEST APPARATUS FOR TESTING INTERNAL COMBUSTION ENGINE ELECTRONIC SPARK IGNITION SYSTEMS

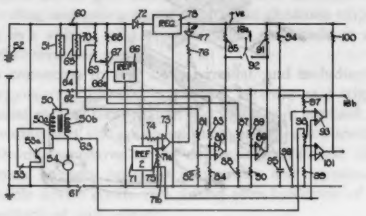
Michael J. Walker, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 21, 1980, Ser. No. 151,929

Claims priority, application United Kingdom, May 25, 1979, 7918389

Int. Cl.³ F02P *17/00*

U.S. Cl. 324—380 **7 Claims**



1. A test apparatus for testing internal combustion engine electronic spark ignition systems of the kind referred to, comprising first means for detecting the instant of interruption of primary current, second means for detecting the commencement of current flow through the primary winding and third means receiving inputs from both said first means and said second means and producing an output pulse indicating a satisfactory operation of the system if said second means does not detect commencement of current flow within a predetermined time after said first means detects interruption of primary current.

4,331,922

TEST APPARATUS FOR TESTING INTERNAL COMBUSTION SPARK IGNITION SYSTEMS

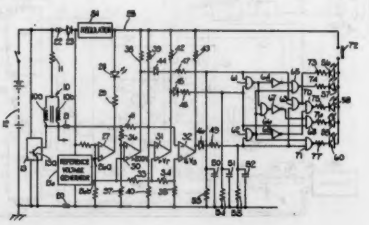
Michael J. Walker, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 21, 1980, Ser. No. 152,128

Claims priority, application United Kingdom, May 25, 1979, 7918387

Int. Cl.³ F02P *17/00*

U.S. Cl. 324—380 **6 Claims**



1. Test apparatus for testing internal combustion engine spark ignition systems, comprising input terminals for connection across the electronic switch of the ignition system under test, a plurality of voltage comparator means connected to compare the voltage across said input terminals with a plurality of different reference voltages and arranged so that each comparator means periodically provides a predetermined output signal when the ignition system is functioning correctly, logic circuit means connected to said comparator means and a plurality of indicator devices connected to said logic circuit means, the arrangement being such that said indicator devices

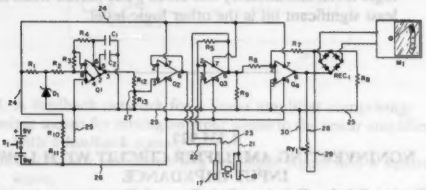
operates to indicate different fault conditions according to which of the comparator means fails to provide its predetermined output signal.

4,331,923

SALTS MONITORING DEVICE

Raymond F. Akers, Jr., 202 Summit Ave., Mantua, N.J. 08051

Filed Aug. 6, 1979, Ser. No. 64,268
Int. Cl.³ G01N 27/42
U.S. Cl. 324—449 5 Claims



1. A small portable monitor usable by an unskilled person for measuring the quantity of total dissolved ionized salts in an undiluted sample comprising:

power supply means for providing in operation a first voltage level and a second and substantially lower voltage level with reference to the power supply ground;

reference voltage generating means including a first alternating current generating means across the first and second voltage levels and providing a first alternating current output cycling between the first and second voltage levels above ground;

a voltage divider having a first leg of relatively high impedance connected between the first alternating current output and a center point and a second leg of relatively low impedance connected between the center point and the second voltage level to provide a second alternating current output from the center point of the voltage divider of substantially reduced magnitude set a predetermined and controlled level above the second voltage level;

an operational amplifier connected into a voltage follower configuration wherein the second alternating current output provides the input to the operational amplifier and the first voltage level and the ground provide the power supply to the operational amplifier and wherein the output of the operational amplifier is the final output of the reference voltage generating means;

a conductivity sensing probe assembly including two spaced electrodes adapted to be submerged in an undiluted sample to be tested, said electrodes being made from a material which is not ionized by the undiluted sample;

amplifier means energized by the power supply means and having an input and output;

circuit means connecting one electrode of the probe assembly to the output of the operational amplifier and the other electrode to the input of the amplifier means thereby providing an input level to the amplifier as a function of the quantity of the total dissolved ionized salts in the sample;

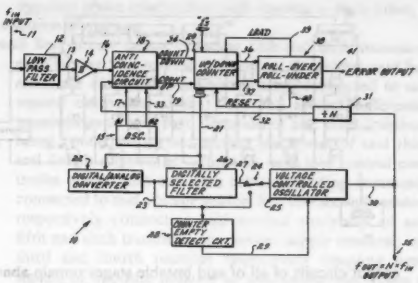
indicator means responsive to the output of the amplifier means providing an indication having a predetermined relationship to the quantity of the total dissolved ionized salts in the sample.

4,331,924

PULSE RATE MULTIPLYING CIRCUITRY

Kenneth D. Elliott, P.O. Box 31227, Cincinnati, Ohio 45231, and Peter F. Elliott, 673 Bunker Hill Rd., Houston, Tex. 77024

Filed May 19, 1980, Ser. No. 151,285
Int. Cl.³ H03B 19/00; H03K 5/00
U.S. Cl. 328—38 10 Claims



1. Pulse rate multiplying circuitry for generating an output pulse train having a frequency which is a selected multiple N of the frequency of an input pulse train, comprising:

an up/down counter, said up/down counter being incremented in response to each pulse in said input pulse train;

a digital/analog converter responsive to the count contained in said up/down counter for producing a voltage proportional to the count contained in said up/down counter;

a voltage controlled oscillator, said voltage controlled oscillator being enabled in a first mode for generating said output pulse train having a frequency proportional to said voltage produced by said digital/analog converter, and said voltage controlled oscillator being disabled in a second mode;

a divide-by-N circuit responsive to said output pulse train for generating a feedback pulse in response to every N pulses generated by said voltage controlled oscillator, said up/down counter being decremented in response to each said feedback pulse; and

a counter empty detect circuit responsive to the count contained in said up/down counter for enabling said voltage controlled oscillator so that said voltage controlled oscillator is in said first mode when a count greater than zero is contained in said up/down counter and for disabling said voltage controlled oscillator so that said voltage controlled oscillator is in said second mode when a zero count is contained in said up/down counter;

whereby said pulse rate multiplying circuitry produces exactly said selected multiple N of output pulses for each said input pulse so that the frequency of said output pulse train is said selected multiple N of the frequency of said input pulse train.

4,331,925

FALSE COUNT CORRECTION IN FEEDBACK SHIFT REGISTERS AND PULSE GENERATORS USING FEEDBACK SHIFT REGISTERS

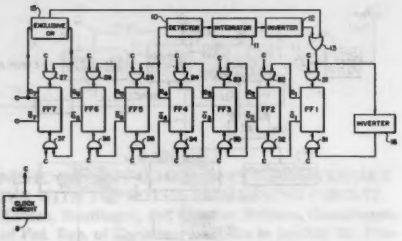
Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 973,642, Dec. 26, 1978, Pat. No. 4,237,464. This application Jun. 17, 1980, Ser. No. 160,349
Int. Cl.³ H03K 21/34
U.S. Cl. 328—42 12 Claims

1. In combination, a feedback shift register including a plurality of cascaded bistable stages each having complementary first and second output circuits at which two distinct voltage

levels may separately appear indicative of a ONE or a ZERO and having associated first and second input circuits,

circuit means including a detector receptive of energy from an output circuit of one of said bistable stages and further including an integrator, said circuit means providing an output voltage which represents a ZERO during normal shifting of said shift register and providing an output voltage which is representative of a ONE when the first



output circuits of all of said bistable stages remain abnormally at the voltage level indicative of a ZERO over an appreciable time interval,

the output of said integrator being coupled to the first input circuit of another of said bistable stages to convert the voltage level at the first output circuit of any of said stages from a level indicative of a ZERO to a level indicative of a ONE during the aforesaid all-ZERO condition.

4,331,926

PROGRAMMABLE FREQUENCY DIVIDER

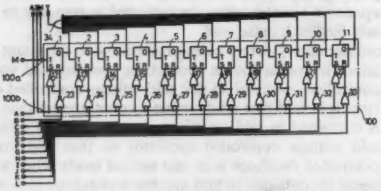
Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

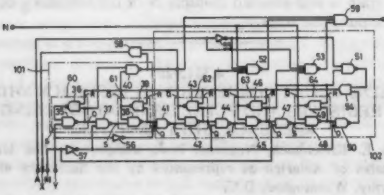
Filed Feb. 5, 1980, Ser. No. 118,850

Claims priority, application Japan, Mar. 15, 1979, 54-30757

Int. Cl.³ H03K *21/36*

U.S. Cl. 328—48 **8 Claims**





1. A programmable frequency divider, comprising:

a programmable counter for counting clock pulses applied to an input terminal thereof, and has program terminals for application of a program value except the least significant bit thereof,

detecting means for generating a count-end pulse upon detection of the end of a counting operation of said programmable counter,

a first control circuit for generating a first divided output pulse after generation of one of said count-end pulses, and for controlling restarting of said counting operation of said programmable counter after a lapse of time T_1 from said count-end pulse generation of said detecting means,

a second control circuit for generating a second divided output pulse after generation of another count-end pulse, and for controlling restarting of said counting operation of said programmable counter after a lapse of time T_2 from said another count-end pulse generation of said detecting means; and

means for mixing said first and said second divided output pulses producing an output signal,

wherein the time T_1 and the time T_2 are the same duration when said least significant bit of said program value is one logic level, and differ by one clock pulse period when said least significant bit is the other logic level.

4,331,927

NONINVERTING AMPLIFIER CIRCUIT WITH LOW INPUT IMPEDANCE

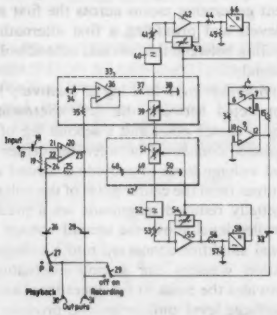
Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,162

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856044

Int. Cl.³ H03F *1/34*; H03G *7/00*

U.S. Cl. 330—51 **6 Claims**



1. A non-inverting amplifier circuit having input and output terminals, comprising:

a first differential amplifier having a non-inverting input coupled to said input terminal, an inverting input, and an output coupled to said output terminal;

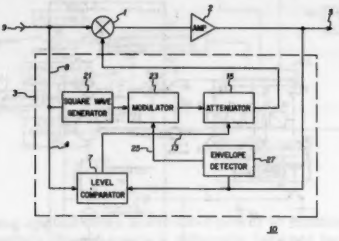
a second differential amplifier having a non-inverting input coupled to the output of said first differential amplifier, an inverting input, and an output coupled to the inverting input of said first differential amplifier, the impedance to direct current between the output and the inverting input of said second differential amplifier being essentially infinite; and

a third differential amplifier having a non-inverting input, an inverting input coupled to the output of said second differential amplifier and an output coupled to the non-inverting input of said second differential amplifier, the input impedance between said input terminal and a reference point being relatively low.

4,331,928
REFERENCED PHASE RF FEEDBACK LINEAR AMPLIFIER

Marvin W. Heidt, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 2, 1980, Ser. No. 155,279
Int. Cl.³ H03F 1/32
U.S. Cl. 330—149 6 Claims

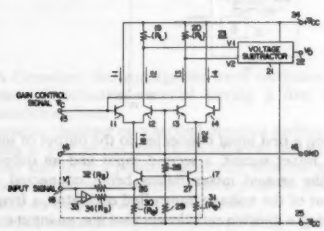


1. A feedback network for a linear amplifier comprising:
mixer means for mixing an input signal to the linear amplifier with a feedback signal;
circuit means for converting the input signal into a square wave;
detector means for separating an envelope signal from the linear amplifier output signal; and
modulator means for modulating the square wave with the envelope signal to obtain the feedback signal.

4,331,929
GAIN-CONTROLLED AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 26, 1980, Ser. No. 133,990
Claims priority, application Japan, Apr. 4, 1979, 54-40436; Dec. 29, 1979, 54-170816
Int. Cl.³ H03F 3/45
U.S. Cl. 330—254 11 Claims

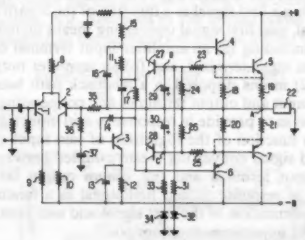


1. A gain-controlled amplifier comprising:
first, second, third and fourth transistors each having first, second and control electrodes, said first and second transistors being connected in differential configuration and having their second electrodes commonly connected, said third and fourth transistors being connected in differential configuration and having their second electrodes commonly connected, a first pair of said first and fourth transistors having their control electrodes commonly connected, a second pair of said second and third transistors having their control electrodes commonly connected, and a control signal being applied between said commonly connected control electrodes of said first and fourth transistors and said commonly connected control electrodes of said second and third transistors;
first circuit means coupled to said commonly connected second electrodes of said first and second transistors and said commonly connected second electrodes of said third and fourth transistors and responsive to application of an input signal thereto for varying a first common current of said first and second transistors which substantially equals the sum of respective currents flowing through said first and second differential transistors and a second common current of said third and fourth transistors which substantially equals the sum of respective currents flowing through said third and fourth differential transistors in opposite phase relationship with respect to each other;
a source of voltage;
said first circuit means including fifth and sixth transistors each having first, second and control electrodes, said first electrode of said fifth transistor being connected to said second electrodes of said first and second differential transistors and said first electrode of said sixth transistor being connected to said second electrodes of said third and fourth differential transistors, and said control electrodes of said fifth and sixth transistors being commonly connected to said voltage source; first and second resistors respectively connecting said second electrodes of said fifth and sixth transistors to a power supply terminal; and third and fourth resistors respectively coupling input signals of opposite polarity to said second electrodes of said fifth and sixth transistors; and
second circuit means coupled to said first electrodes of one of said first and second pairs of transistors for producing an output signal corresponding to the difference between respective currents flowing through said one pair of transistors.

4,331,930
BIAS CIRCUIT FOR POWER AMPLIFIER

Isumi Shibata; Kazumasa Sakai, and Nobuyuki Sanpei, all of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,540
Claims priority, application Japan, Jan. 18, 1979, 54-5402
Int. Cl.³ H03F 3/20
U.S. Cl. 330—267 7 Claims



1. In a single-ended push-pull amplifier of the type biased so as to perform class A or class AB amplification, said amplifier having first and second output transistors connected to supply a driving current to a load connected to a common output of the amplifier, the improvement in a bias circuit for said amplifier comprising:
first and second DC limiting transistors connected respectively between said common output and the bases of said first and second output transistors;
first and second biasing means respectively connected to the bases of said first and second DC limiting transistors for supplying a bias voltage corresponding to the output current of said output transistors to thereby limit the idling currents of said output transistors when no input signal is applied to the amplifier; and
means connected between said common output and the bases of said first and second DC limiting transistors for chang-

ing the idling currents of said first and second output transistors corresponding to a change in the output voltage at said common output whereby the amplifier continuously performs class A or class AB amplification.

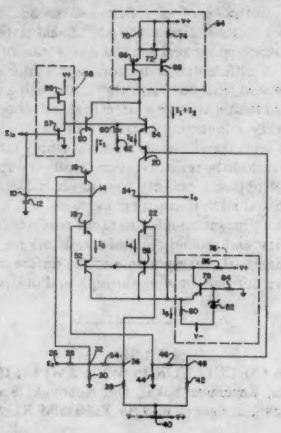
4,331,931
GAIN CONTROL SYSTEMS

Robert W. Adams, Medford, Mass., assignor to DBX, Inc., Newton, Mass.

Continuation of Ser. No. 90,328, Nov. 1, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 131,225

Int. Cl.³ H03F 3/18; G06G 7/12

U.S. Cl. 330—278 **10 Claims**



1. A signal gain controlled system for impressing a gain on an input signal as a function of a control signal, said system being of the type including: (A) a system input terminal for receiving an input signal and a system output terminal for providing an output signal; (B) first signal converting means for providing a first signal as a function of the logarithm of said input signal, said first signal converting means including (1) an amplifier including (a) an amplifier input terminal coupled to said system input terminal, and (b) an amplifier output terminal, and (2) means disposed in a feedback path between said amplifier input and output terminals and cooperating with said amplifier so as to provide in response to said input signal, a first signal as a function of the logarithm of said input signal; and (C) second signal converting means coupled between the amplifier output terminal and the system output terminal for providing in response to said first signal as a function of the algebraic summation of the first signal and said control signal, wherein the improvement comprises:

amplification means coupled to said amplifier output terminal and responsive to the output of said amplfier for amplifying said first signal as a function of the output signal of said amplifier.

4,331,932
FREQUENCY SYNTHESIZER HAVING A VERY HIGH SPECTRAL PURITY

Joël Remy, Paris, France, assignor to Adret Electronique, France

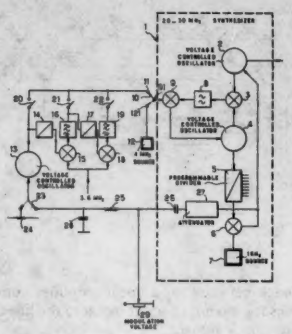
Continuation-in-part of Ser. No. 913,726, Jun. 7, 1978. This application Jun. 20, 1980, Ser. No. 161,260

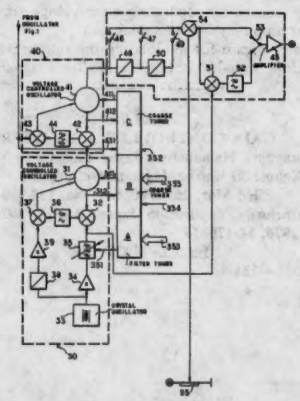
Claims priority, application France, Jun. 17, 1977, 77 19353

Int. Cl.³ H03L 7/20

U.S. Cl. 331—2 **5 Claims**

1. Frequency synthesizer apparatus including in combination: a voltage controlled oscillator having an output and a control input; a source of standard frequency signal; first harmonic generating means coupled to the said source for producing a plurality of harmonics of the standard frequency signal, the highest frequency of said harmonics not exceeding ten times the standard frequency; first subtractive mixer means coupled to the said first harmonic generating means and to the output of the voltage controlled oscillator, said first subtractive mixer means having an output; second subtractive mixer





means having a first input connected to the output of said first subtractive mixer means, a second input and an output, the output of the second mixer means being connected to the control input of the voltage controlled oscillator; a frequency divider having a division ratio lower that ten, an input coupled to the said source and an output; and second harmonic generating means connecting the output of the frequency divider to the second input of the second mixer means.

4,331,933
MICROWAVE POWER LEVEL STABILIZING CIRCUIT FOR CESIUM BEAM FREQUENCY STANDARDS

David W. Allan, Boulder, Colo., and R. Michael Garvey, Swampscott, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 926,059, Jul. 19, 1978, abandoned. This application Jun. 19, 1980, Ser. No. 161,185

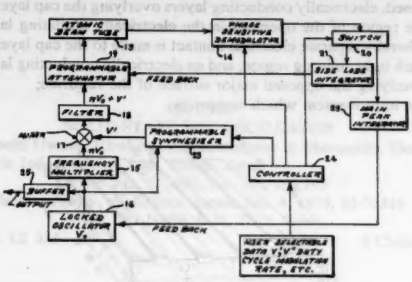
Int. Cl.³ H03L 7/26

U.S. Cl. 331—3 **5 Claims**

1. The method of reducing frequency error in an atomic clock having an atomic beam frequency spectrum with a cen-

tral atomic peak and symmetric sidelobes comprising the steps of

monitoring the frequencies of the central atomic peak and a sidelobe peak of the clock frequency spectrum, and



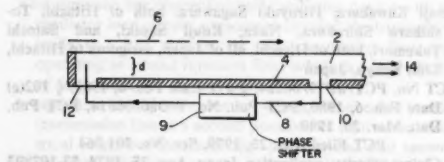
varying applied clock microwave power to maintain a substantially fixed frequency difference between the central atomic peak frequency and the sidelobe peak frequency.

4,331,934

CERENKOV SUBMILLIMETER ELECTROMAGNETIC WAVE OSCILLATOR

Clyde A. Morrison, Wheaton, and Richard P. Leavitt, Berwyn Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1979, Ser. No. 89,051
Int. Cl.³ H01J *25/00*; H03B *9/01*
U.S. Cl. 331—79 **4 Claims**



1. A Cerenkov electromagnetic wave oscillator, comprising

a slab of dielectric material having a first substantially smooth surface,

a metallic cladding on a second opposed surface of said slab,

means to pass an electron beam adjacent said first surface of said slab from a position generally adjacent an input portion of said wave oscillator to a position generally adjacent an output portion thereof, and

feedback means for selectively amplifying a chosen mode of radiation emitted from said oscillator.

4,331,935

TUNING APPARATUS FOR A RADIO FREQUENCY POWER DEVICE

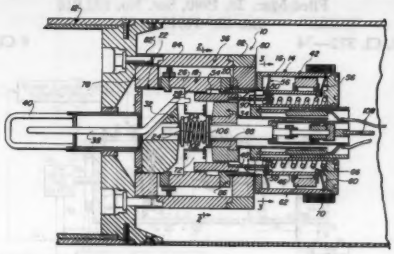
Geoffrey Thornber, Aptos, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 13, 1979, Ser. No. 66,226
Int. Cl.³ H01J *25/50*; H03B *9/10*
U.S. Cl. 331—90 **4 Claims**

1. A tuning assembly for selectively oscillating the frequency of an electromagnetic field within a hermetically sealed device, said device having a rigid, hermetically sealed housing, means for generating said electromagnetic field; therewithin, and means for defining a cavity within said housing for establishing the frequency of said electromagnetic field, said tuning assembly comprising:

electrically conductive means mounted for linear movement within said cavity to selectively vary the volume of said cavity to oscillate said established frequency;

mounting means disposed within said rigid housing comprising a support member for securely mounting said electrically conductive means within said housing, and flat, leaf spring means for connecting said support member to said housing and adapted to permit linear oscillatory movement of said support member to said housing and adapted



to permit linear oscillatory movement of said support member within said housing, said pre-selected mechanical resonant frequency being determined by the mass of said electrically conductive means and said mounting means and the spring rate of said leaf-spring means; and

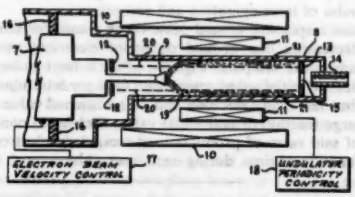
power means disposed exterior to said rigid housing and magnetically coupled to said mounting means for exciting said mounting means.

4,331,936

FREE ELECTRON LASER EMPLOYING AN EXPANDED HOLLOW INTENSE ELECTRON BEAM AND PERIODIC RADIAL MAGNETIC FIELD

S. Perry Schlesinger; Thomas C. Marshall; David B. McDermott, all of New York, N.Y.; Victor L. Granatstein, Silver Spring, Md.; Robert K. Parker, Alexandria, Va.; Phillip A. Sprangle, Silver Spring, Md., and Philip C. Efthimion, Princeton Junction, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 9, 1979, Ser. No. 92,801
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—2 **9 Claims**



1. A source of high power coherent radiation comprising

an evacuated drift tube having an output for coherent radiation,

means for generating an intense relativistic electron beam projecting a cylindrical beam of relativistic electrons along the longitudinal axis of said drift tube,

a first means for producing a magnetic field positioned to effect expansion of said cylindrical beam into an annular peripheral interaction region of said drift tube, and

a second means for producing a magnetic field adapted to provide a periodic radial magnetic field in said interaction region, said periodic radial magnetic field interacting with

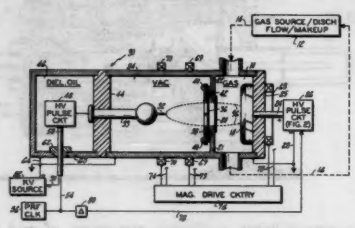
the expanded cylindrical beam of relativistic electrons to effect the generation of coherent radiation.

4,331,937

STABILITY ENHANCED HALIDE LASERS

Robert T. Brown, and William L. Nighan, both of Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 20, 1980, Ser. No. 132,018
Int. Cl.³ H01S 3/97
U.S. Cl. 372—74 **6 Claims**



1. An improved halide pulse laser, pumped by an electron beam sustained electric discharge, including:

a laser chamber containing a mixture of a buffer gas, an energy transfer gas, and a fuel gas, and providing a laser gain region;

pulse clock means providing signals indicative of times at which pulsed laser operation is to occur;

electric discharge means including a pulsed electron gun for injecting a pulse of high energy primary electrons into said laser gain region for ionizing ground state molecules of said mixture to produce secondary electrons at a first rate for which a dominant electrical parameter is the density of primary electrons in said laser gain region, said pulse having a temporal expanse on the order of one microsecond, and including electric field means having a high voltage source connected between an anode and a cathode disposed to provide an electric field in said laser gain region for accelerating secondary electrons to produce metastables at a second rate for which a dominant electrical parameter is the strength of said electric field, and concomitantly ionize metastables and produce additional secondary electrons at a third rate dependent on said second rate;

wherein the improvement in said electric discharge means delays the onset of electric discharge instability during a pulse of laser operation and comprises:

means responsive to said pulse clock means for temporally decreasing one of said dominant electrical parameters across the temporal expanse of each laser pulse from a desired initial value, maintained for a predetermined initial time less than a microsecond, to a sustained value that is a large fraction of said initial value, thereby to control one of said rates of production of secondary electrons, as a function of time, during each laser pulse.

4,331,938

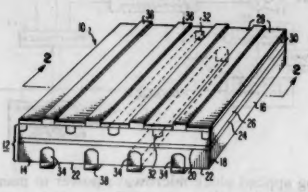
INJECTION LASER DIODE ARRAY HAVING HIGH CONDUCTIVITY REGIONS IN THE SUBSTRATE

Albert C. Limm, Lancaster; James T. O'Brien; Thomas V. Colgrove, both of Leola, and Paul Nyul, New Holland, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,898
Int. Cl.³ H01S 3/19
U.S. Cl. 372—50 **5 Claims**

1. In an edge emitting semiconductor injection laser diode array having multiple light emitting regions which comprises: a substrate of semiconductor material having two major opposed surfaces and two opposed end surfaces, at least one of which is partially transmissive to light; an active layer overlying the substrate; a cap layer overlying the active layer; an electrically insulating layer overlying the cap layer and having multiple openings therethrough whereby the cap layer is exposed; electrically conducting layers overlying the cap layer in the region of the openings in the electrically insulating layer whereby separate electrical contact is made to the cap layer in each light emitting region; and an electrically conducting layer overlying the opposed major surface of the substrate;

the improvement which comprises



regions of the same conductivity type as the substrate and of higher conductivity than the substrate which extend from those portions of the second major surface of the substrate opposed to the openings in the electrically insulating layer a distance into the substrate towards the p-n junction; and

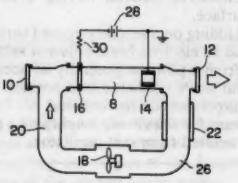
electrically conducting layers overlying those portions of the second major surface from which the regions of higher conductivity extend into the body whereby separate electrical contact is made to each of the regions of higher conductivity.

4,331,939

GAS LASER DEVICE

Kouji Kuwabara; Hiroyuki Sugawara, both of Hitachi; Toshiharu Shirakura, Naka; Kouji Sasaki, and Satoshi Takemori, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00224, § 371 Date Feb. 6, 1980, § 102(e) Date Feb. 6, 1980, PCT Pub. No. WO80/00514, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 23, 1979, Ser. No. 201,064
Claims priority, application Japan, Aug. 25, 1978, 53-102893
Int. Cl.³ H01S 3/08
U.S. Cl. 372—92 **5 Claims**



1. In a flowing-gas glow-discharge laser of the axial flow type having at least one discharge tube in series with a total-reflection mirror disposed at one end of said discharge tube and a partial-reflection mirror disposed at the other end of said discharge tube to form a resonant cavity, at least two electrodes one of said electrodes being on an upper gas stream side of said discharge tube so that energy of the glow discharge is generated across the electrodes the improvement comprising: a discharge gas circulating hole provided in a radially central part of said electrode on said upper gas stream side, and that the upper gas stream side electrode is provided with a plurality of gas circulating apertures in a portion of said electrode surrounding an outer peripheral part of said discharge gas circu-

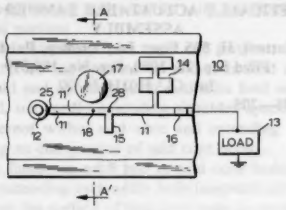
lating hole, thereby to define a glow discharge portion towards a radially central part within said discharge tube.

4,331,940

SOLID-STATE MIC OSCILLATOR

Tomoki Uwano, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1980, Ser. No. 156,195
Claims priority, application Japan, Jun. 4, 1979, 54-70316
Int. Cl.³ H03B *5/18, 7/14, 9/14*
U.S. Cl. 331—99 **2 Claims**



1. A solid-state MIC (microwave integrated circuit) oscillator fabricated in the form of a planar transmission circuit and comprising:

a solid-state oscillation device;

a transmission line connecting said oscillation device with an oscillator load circuit; a resonator coupled electromagnetically at a first position on said transmission line, and operating as a band rejection filter which is a load circuit of said oscillation device; and

a capacitive susceptance element which is connected to said transmission line at a second position, an equivalent electrical angle between said first position and said second position being between zero and $\pi/4$ radian (45°) and said second position being located toward said oscillator load circuit from said first position, so as to decrease variation of oscillation temperature frequency characteristics caused by variation of said oscillator load circuit.

4,331,941

DIGITAL PHASE DOMAIN AMPLITUDE MODULATION METHOD AND APPARATUS

Al Kovalick, Santa Clara, and Rolly Hassun, San Carlos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 29, 1980, Ser. No. 126,083
Int. Cl.³ H03C *1/50*
U.S. Cl. 332—31 R **24 Claims**

24. A method for digitally amplitude-modulating an applied carrier signal in the phase domain comprising the steps of:

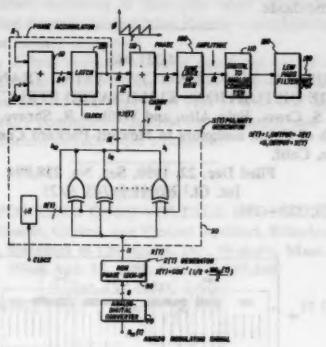
phase-converting a modulating signal;

alternating the polarity of the phase-converted modulating signal;

accumulating a linearly-increasing phase count;

adding the polarity alternating phase-converted modulating signal and the accumulated phase count;

converting the sum of the addition to phase values of a sine wave;



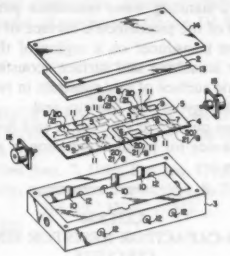
digitally converting the phase values to an analog signal; and filtering the analog signal.

4,331,942

STRIPLINE DIODE PHASE SHIFTER

Makoto Matsunaga, and Akihito Mizobuchi, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 93,960
Claims priority, application Japan, Nov. 15, 1978, 53-140591
Int. Cl.³ H01P *1/185*
U.S. Cl. 333—161 **5 Claims**



1. A stripline diode phase shifter of the type comprising: at least one hybrid coupler having an input port, an output port and at least one phase shifting port; at least one phase shifting diode coupled to said at least one phast shifting port; and biasing means for applying a DC bias voltage to said at least one diode to control the phase of the signal at said output port, the improvement comprising:

said at least one diode being coupled to said at least one phase shifting port via coupling line-type coupling means for coupling RF energy from said at least one phase shifting port to said at least one phase shifting diode while isolating said at least one phase shifting port from said DC bias voltage;

said hybrid coupler being of the type comprising a dielectric having first and second surfaces, a first hybrid coupling line conductor printed on said first surface and a second hybrid coupling line conductor printed on said second surface; and

said coupling line-type coupling means comprising a first coupling conductor connected to one of said first and second hybrid coupling line conductors and disposed on the same surface as the hybrid coupling line conductor to which it is connected, and a second coupling conductor

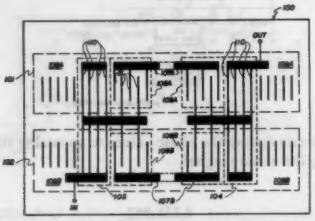
juxtaposed with said first coupling conductor on the opposite surface of said dielectric and coupled to said at least one diode.

4,331,943

ACOUSTIC WAVE DEVICES HAVING TRANSVERSE MODE DISTORTIONS ELIMINATED STRUCTURALLY

Peter S. Cross, Palo Alto, and William R. Shreve, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 218,894
Int. Cl.³ H03H *9/145, 9/25*
U.S. Cl. 333—194 **8 Claims**



1. A surface acoustic wave resonator comprising a plurality of substantially identical surface acoustic wave sub-devices, wherein each of said sub-devices comprises:

common substrate having at least a surface layer of piezoelectric material;

means defining first and second reflecting grating structures of surface acoustic waves on the piezoelectric surface for providing a standing wave resonance pattern in at least one region of the piezoelectric surface of said substrate;

at least a first transducer on a region of the piezoelectric surface for launching said surface acoustic waves on the piezoelectric surface of said substrate in response to input electrical energy applied thereto; and

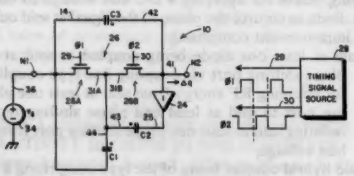
a first common connector coupled to said first transducer of each sub-device for parallel operation of said plurality of sub-devices.

4,331,944

SWITCHED-CAPACITOR RESISTOR SIMULATION CIRCUITS

Man S. Lee, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Jul. 23, 1980, Ser. No. 171,523
Int. Cl.³ H03H *11/46*
U.S. Cl. 333—213 **23 Claims**



1. An integratable switched capacitor circuit for simulating a resistor comprising:

first and second nodes;

voltage follower means having an input terminal electrically connected to said second node and having an output terminal;

first capacitor means having first and second terminals;

first means electrically connecting the first terminal of said first capacitor means to the output terminal of said voltage follower means;

second means electrically connecting said first node to one of a ground reference potential and the output terminal of a voltage source that is associated with a ground reference potential; and

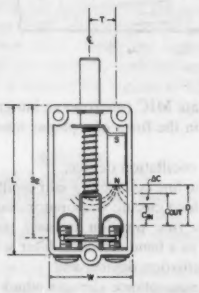
first switch means for periodically electrically connecting the second terminal of said first capacitor means to said first and second nodes at a prescribed switching frequency so as to simulate a resistor across said nodes.

4,331,945

MAGNETICALLY ACTUATABLE TAMPER SWITCH ASSEMBLY

Cyrus J. Cattani, II, 885 Piper La., Yardley, Pa. 19067

Filed Sep. 23, 1980, Ser. No. 189,879
Int. Cl.³ H01H *36/00*
U.S. Cl. 335—205 **9 Claims**



6. In a tamper switch assembly of the type wherein a housing is elongated in a longitudinal direction from a first end to a second end, and a plunger elongated in the longitudinal direction is operatively mounted for longitudinal movement through an aperture in said first end, the improvement which comprises:

an elongated bar magnet fixedly suspended, in an offset manner, from a support extending transversely from said plunger, wherein the longitudinal axis of said magnet is substantially parallel to the longitudinal axis of said plunger, and said magnet is magnetized in a direction parallel to its longitudinal axis; and

at least one elongated reed switch element, of the type having two contact reeds encapsulated therein, disposed with its longitudinal axis transverse to said housing, said switch mounted proximate said second end and in electrical contact between two electrical connections at the second end of said housing, wherein the two contact reeds are disposed with an overlap substantially symmetrical with respect to the longitudinal axis of said plunger and thereby transversely offset with respect to the longitudinal motion of said bar magnet;

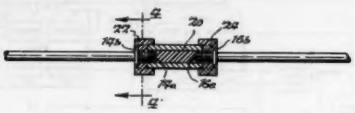
whereby movement of said plunger from a first position, wherein the distal end of said magnet is proximate the mid point of said housing, to and below a second position, wherein the distal end of said magnet is proximate to one of said contact reeds, generates an attractive force between said reeds and closes an electrical circuit between said two electrical connections.

4,331,946

CONNECTION OF WIRE LEADS TO MINIATURE COIL ASSEMBLIES

Donald C. McElheny, Delevan, N.Y., assignor to American Precision Industries Inc., Buffalo, N.Y.

Division of Ser. No. 748,933, Dec. 9, 1976, Pat. No. 4,231,985.
This application Dec. 21, 1979, Ser. No. 106,371
Int. Cl.³ H01F 15/10, 27/30
U.S. Cl. 336—192 6 Claims



1. A coil assembly comprising:

a core body having end portions with an opening in each said end portion,

a wire lead extending from each end portion of said core body and having one end of said wire lead disposed in each said end opening, each said wire lead including an integral, outwardly extending shoulder spaced from the end thereof within said core and extending across and abutting an end portion of said core body,

a molded flange on each end of said core body, each said flange extending outwardly both longitudinally and radially from the surface of said core body to encapsulate the adjacent end opening therein so as to firmly position said shoulder of said wire lead to said core body, the material forming said flange extending within and substantially completely filling the interior of said core body to surround and grip said ends of said wire leads and secure them interiorly of said core body, and

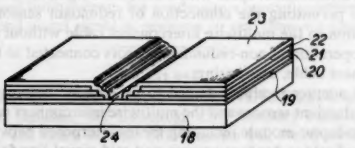
a coil winding disposed about said core body between said outwardly extending flanges thereon, each end of said winding passing over one of said flanges and connected to one of said wire leads longitudinally outwardly of said flange.

4,331,947

ELECTRIC SAFETY FUSE

Olav Noerholm, Helsinge, Denmark, assignor to Aktieselkabet Laur. Knudsen Nordisk Electricitets, Copenhagen, Denmark

Continuation of Ser. No. 907,354, May 18, 1978, Pat. No. 4,246,563. This application Apr. 15, 1980, Ser. No. 140,423
Claims priority, application Denmark, Mar. 10, 1978, 1097/78; United Kingdom, May 28, 1977, 22659/77
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ H01H 85/04
U.S. Cl. 337—159 9 Claims



1. A laminated electric safety fuse of the type wherein the fuse member is surrounded by a granular arc suppression material, the fuse having an electrically insulating supporting substrate and at least one layer of electrically conductive material deposited thereon, wherein the improvement comprises:

said at least one layer of conductive material including first and second end regions contiguous to opposite ends of an intermediate break region, the electrical conductivity of said end regions being at least as high as the electrical conductivity of the break region,

said substrate including at least one layer of electrically insulating material having good thermal conductivity, and the fuse further comprises

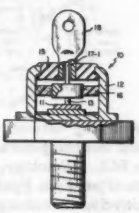
a coating of heat resistant material deposited on the otherwise exposed surface of the topmost layer in at least the first and second end regions of said at least one layer of electrically conductive material for protecting said otherwise exposed surface from oxidation.

4,331,948

HIGH POWERED OVER-VOLTAGE PROTECTION

Paul J. Malinaric, Groton, and Vincent Squitieri, Billerica, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Aug. 13, 1980, Ser. No. 177,648
Int. Cl.³ H01C 7/10
U.S. Cl. 338—21 17 Claims



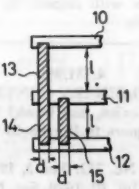
1. As an article of manufacture, a threshold voltage conduction material comprising a dielectric plastic binder having dispersed therein particulate silicon carbide and a lesser amount by volume of particulate Group IV B element—carbide.

4,331,949

THICK FILM PRINTED CIRCUIT

Yoshii Kagawa, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 175,954
Claims priority, application Japan, Aug. 8, 1979, 54-109061
Int. Cl.³ H01C 1/012
U.S. Cl. 338—307 2 Claims



1. A thick film printed circuit including a potential dividing circuit having a plurality of printed resistance patterns for dividing voltage; said potential dividing circuit including:

first, second and third electrode patterns; a first resistance pattern having a uniform width extending transversely across the first, second and third electrode patterns; and a second resistance pattern adjacent and in parallel to said first resistance pattern, said second resistance pattern having a width substantially equal to that of the first resistance pattern and extending between said second electrode pattern and only one of said first and third electrode patterns.

4,331,950
BROAD BAND SWITCHING NETWORK

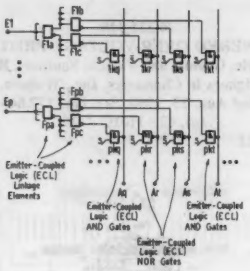
Udo Barabas, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,977

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944794

Int. Cl.³ H04N 5/22; H04Q 9/00

U.S. Cl. 340—825.87 **2 Claims**


Emitter-Coupled Logic (ECL) Linkage Elements
Emitter-Coupled Logic (ECL) AND Gates
Emitter-Coupled Logic (ECL) AND Gates
Emitter-Coupled Logic (ECL) NOR Gates

1. A broad band switching network for pulse-modulated broad band signals, said switching network comprising coupling point circuits in ECL technology, constantly unlocked ECL linkage elements (Fpa, Fpb, Fpc) with a plurality of outputs with or, respectively, without negation being provided for the connection of the individual inputs (El . . . Ep) of the switching network to the coupling point circuits, said coupling point circuits comprising coupling point switches (. . . , pkq, . . . , pkt, . . .) appertaining to the respective input (Ep) and leading to the various outputs (. . . , Aq, . . . , At, . . .) of the switching network,

the coupling point switches (pkt,pkq) in which case the broad band signals experience 2n−2 negations (with n=1,2, . . .) in said ECL linkage elements (Fpa, Fpb; Fpa, Fpc) which are preconnected to the cross point switches (pkt, pkq) in iterative network, on the one hand, and the coupling point switches (pkr,pks) in whose case the broad band signals experience 2n−1 negations (with n=1,2, . . .) in said ECL linkage elements (Fpa, Fpc; Fpa, Fpb) which are preconnected to the coupling point switches (pkr, pks) in iterative network, on the other hand,

being formed by means of ECL linkage elements (AND, NOR) with linkage functions which are interchanged with one another with respect to the pulse-modulated broad band signals.

4,331,951
BCD-TO-BINARY CONVERTER

Laurence P. Flora, Covina, and Daniel P. Wiener, Glendale, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 732, Jan. 3, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,828

Int. Cl.³ H03K 13/24

U.S. Cl. 340—347 DD **12 Claims**

7. Apparatus for converting a plurality of BCD binary input signals representing the BCD digits of a decimal number into a plurality of equivalent binary signals representing the decimal number in true binary form, said apparatus comprising:

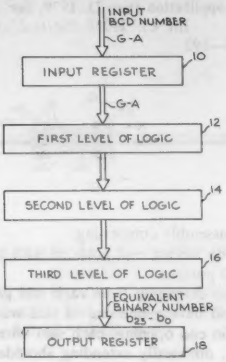
binary adder means to which said BCD binary input signals are applied for conversion into said equivalent binary signals;

said binary adder means being connected to said BCD binary input signals so as to provide for addition thereof in a columnar arrangement corresponding to a powers of 2 expansion of the BCD digits of said decimal number;

said binary adder means comprising:

at least one level of logic including a plurality of individually programmed PROMs;

each PROM being programmed to provide PROM output binary signals representing the addition of a predetermined plurality of said BCD binary input signals; and



at least one PROM having its input binary signals and programming chosen so as to provide for the addition of more binary signals than the maximum number of PROM inputs available.

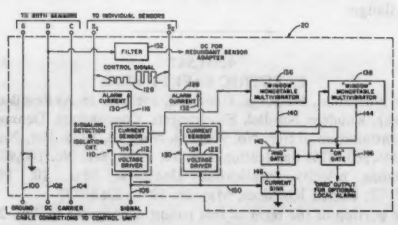
4,331,952
REDUNDANT SENSOR ADAPTER

Aaron A. Galvin, Lexington, and Kevin D. Flynn, Somerville, both of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,609

Int. Cl.³ G08B 29/00, 19/00

U.S. Cl. 340—508 **11 Claims**



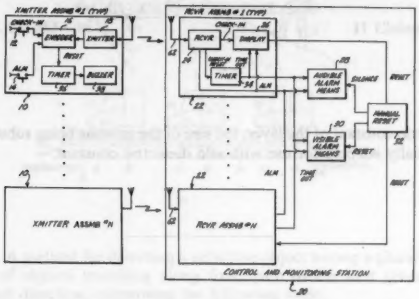
1. Apparatus for a facility monitoring system having a multiwire interconnect cable which includes a signal line, said apparatus permitting the connection of redundant sensors at one location to the multiwire interconnect cable without affecting the operation of non-redundant sensors connected to the interconnect cable, comprising:

an adapter module adapted to be coupled between the redundant sensors and the multiwire interconnect cable, said adapter module including means interposed between each of said redundant sensors and said signal line for sensing an output signal from a corresponding redundant sensor and for isolating said sensor so that its output signal is not applied to said signal line; and, means for coupling to said signal line a predetermined signal upon the simultaneous or sequential occurrence of sensed output signals from said redundant sensors, said signal line carrying control signals and said sensing and isolating means including means for coupling the control signals carried by said signal line to a corresponding redundant sensor.

4,331,953
COMMUNICATION SYSTEM FOR USE IN HAZARDOUS CONFINED AREAS

Gerald G. Blevins, Edmonds; Fred S. Fairbank, Everett; Wayne E. Hixson, Seattle, and Reginald F. Knowlton, Everett, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 26, 1979, Ser. No. 106,871
Int. Cl.[3] G08B 1/08; H04Q 7/00
U.S. Cl. 340—539 11 Claims



1. A communication system for use in a confined hazardous area comprising:

a transmitter for selectively transmitting a first signal and a second signal;

a first manually actuatable means associated with said transmitter operable to initiate transmission of said first signal;

a second manually actuatable means associated with said transmitter operable to initiate transmission of said second signal;

first timing means associated with said transmitter and coupled to said first manually actuatable means, said first timing means being initialized by operation of said first manually actuatable means and producing an alert signal upon expiration of a first predetermined time period after initialization;

alert means associated with said transmitter and coupled to said first timing means, said alert means producing a humanly perceptible reminder signal in response to said alert signal;

receiving means for receiving said first and second signals;

first alarm means associated with said receiving means for producing a humanly perceptible first alarm signal in response to reception of said second signal;

second timing means associated with said receiving means, said second timing means being initialized in response to reception of said first signal and producing a time-out signal upon expiration of a second predetermined time period after initialization if said timer means is not initialized again during said second predetermined time period;

second alarm means associated with said receiver and said second timing means for producing a humanly perceptible second alarm signal in response to said time-out signal.

4,331,954
PLANAR COORDINATE RESOLVING SYSTEM

Verne W. Bauman, 887 Conestoga Cir., Newbury Park, Calif. 91320, and Gary R. See, 659 Wilshire Pl., Newbury Park, Calif. 91320

Filed Oct. 10, 1980, Ser. No. 196,131
Int. Cl.[3] G08C 9/00
U.S. Cl. 340—706 9 Claims

1. A planar coordinate resolving system used in combination with an existing subsystem comprising a computer interface unit, a digital computer, and a data display unit, where said system comprises:

a. a tracing board;

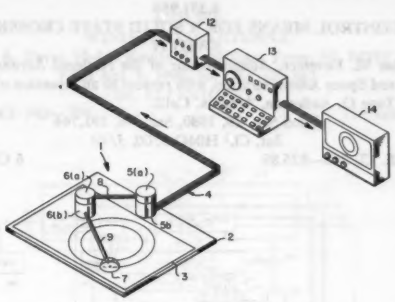
b. a first variable resistor having a resistance adjustment shaft and an outer case rigidly attached to said tracing board;

c. a second variable resistor having a resistance adjustment shaft and an outer case;

d. a first linkage arm having one end rigidly attached to the shaft of said first variable resistor and the other end to the shaft of said second variable resistor;

e. a mechanical pointer for locating position of a plane image placed adjacent to said tracing board;

f. a second linkage arm having one end rigidly attached to the outer case of said second variable resistor and the other end rigidly attached to said pointer;



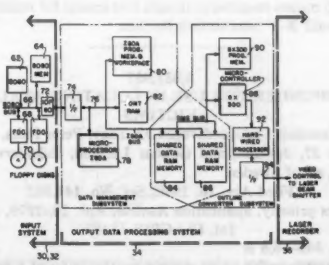
g. means for generating electrical analog signals corresponding to resistance values of said first variable resistor and said second variable resistor;

h. means for applying said electrical analog signals corresponding to said first variable resistor and said second variable resistor to said computer interface unit where the signals are converted to digital data bits for subsequent application to said digital computer and said data display unit.

4,331,955
METHOD AND APPARATUS FOR SMOOTHING OUTLINES

Walter I. Hansen, Cold Spring Harbor, N.Y., assignor to Eltra Corporation, Morristown, N.J.

Filed Aug. 7, 1980, Ser. No. 175,990
Int. Cl.[3] G09G 1/00
U.S. Cl. 340—728 46 Claims



1. A method of smoothing the outline profiles of variable size characters for display, by altering a normalized encoded character data base comprising a plurality of encoded outline contours extending successively along the character outlines in straight line profiles, each straight line profile having a respective start point and end point, and including the steps of

(a) selecting a character and character size for display

(b) identifying at least two encoded outline straight lines in a profile, for said character,

(c) comparing the angularity of said straight lines to a standard

(d) replacing the code for at least one of said identified straight lines with the code for at least two replacement straight lines in response to said comparison, one of said replacement straight lines being continuous with the non-replaced straight line of the said identified outline straight lines, said non-replaced and replacement straight lines defining a smoother outline profile.

4,331,956

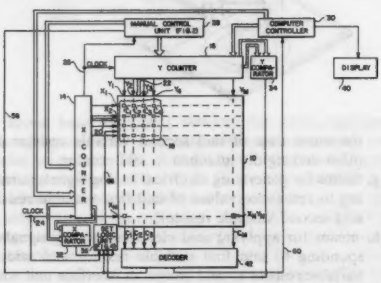
CONTROL MEANS FOR A SOLID STATE CROSSBAR SWITCH

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Tage O. Anderson, Arcadia, Calif.

Filed Sep. 29, 1980, Ser. No. 191,744

Int. Cl.³ H04Q *9/00, 3/42*

U.S. Cl. 340—825.89 **6 Claims**



1. A control system for a solid state crossbar switch having X rows, Y columns, and Z switching planes, each X-Y intersection including an intersection latch for simultaneously controlling corresponding latches in each of said Z switching planes, said system comprising:

first means for continually and sequentially accessing each of said X-Y intersection latches;

second means responsive to said first means for determining which of said intersection latches are in a set condition;

third means responsive to said first means for ensuring that only one X-Y intersection latch in an X row and Y column defining a predetermined X-Y intersection latch is in a set condition; and

fourth means responsive to said first means for resetting each of said X-Y intersection latches.

4,331,957

TRANSPONDER FOR USE IN LOCATING AVALANCHE VICTIMS

Bengt Enander, Ladugardsvagen 32, Täby; Peter Fuks, Manadsvagen 27, Jarfalla, and Gunnar Larsson, Eskadervagen 32, Täby, all of Sweden

Filed Apr. 18, 1980, Ser. No. 141,362

Claims priority, application Austria, Apr. 20, 1979, 2991/79

Int. Cl.³ G01S *13/80*

U.S. Cl. 343—6.8 R **6 Claims**

1. A transponder to be carried on the body of a person for use in locating avalanche victims, which transponder is designed for cooperation with a search-transmitter which generates a signal with a fundamental frequency of approximately 1000 MHz, said transponder comprising a receiver having a passive non-linear element which produces a higher harmonic by distortion of the fundamental frequency received from the search transmitter; metal parts connected to the non-linear element and which function as a receiver/transmitter antenna tuned to the frequency employed; and a dielectric layer covering a side of the transponder facing the body, the thickness of the layer being substantially adapted for use with the fundamental and a reradiated harmonic frequency and to the dielectric constant of the layer, the size of the antenna being substantially adapted for use with said dielectric constant.

4,331,958

PROCESSING DEVICE FOR ANGULAR DEVIATION MEASUREMENT SIGNALS OF A MONOPULSE RADAR

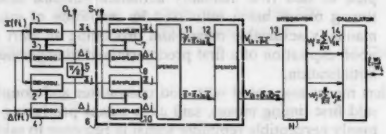
Philippe Lacomme, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 25, 1980, Ser. No. 133,884

Claims priority, application France, Mar. 30, 1979, 79 08094

Int. Cl.³ G01S *13/44*

U.S. Cl. 343—16 M **9 Claims**



1. A device for processing intermediate-frequency sum signals $\Sigma(fi)$ and difference signals $\Delta(fi)$, derived from echo signals reflected by a target tracked by a monopulse radar, in order to determine the angular offset of the target position from the boresight axis of a radar antenna transmitting recurrent outgoing pulses toward the target, comprising:

arithmetic means for generating from said sum and difference signals $\Sigma(fi)$ and $\Delta(fi)$, for each recurrence of an outgoing-pulse transmission in a series of N such recurrences, a real component V_{iK} and an imaginary component V_{jK} of an angular-deviation vector $\vec{V}$ in a complex plane, K being an integer ranging from 1 through N, with component V_{iK} defined as the scalar product and component V_{jK} defined as the vector product of two ancillary vectors $\vec{\gamma}=\vec{\Sigma}+jp\vec{\Delta}$ and $\vec{\epsilon}=\vec{\Sigma}+jq\vec{\Delta}$, p and q being two mutually different real coefficients not more than one of which can be zero, $\vec{\Sigma}$ and $\vec{\Delta}$ being a sum vector and a difference vector in said complex plane with in-phase and quadrature components Σ_i, Δ_i and Σ_j, Δ_j determined by a periodic reference signal;

integration means connected to said arithmetic means for separately integrating said components V_{iK} and V_{jK} over N recurrences to produce a pair of components W_i and W_j of a further vector W in said complex plane; and

calculating means connected to said integration means for computing the quotient W_j/W_i of said pair of components as a useful angular-deviation signal.

4,331,959

METHOD AND APPARATUS FOR DETECTING A DEFECTIVE OBJECT ON A LANE OR TRACK

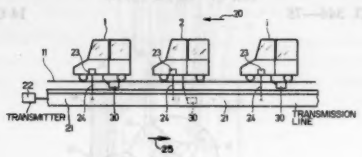
Juergen Brauer, and Wolf-Dieter Schuck, both of Neubiberg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,857

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918178

Int. Cl.³ H01Q 17/00; B61L 3/00

U.S. Cl. 343—18 A 11 Claims



1. A method for detecting a defective object among a plurality of objects travelling along fixed path means in a given travel direction, comprising the following steps:

(a) providing a signal transmission medium along the fixed path means;

(b) transmitting at a transmission point one or more signals along said transmission medium in a transmission direction opposite to said given travel direction;

(c) normally receiving said signal or signals by receiver means installed at least at one point downstream of said transmission point as viewed in said transmission direction;

(d) providing each object with a signal interrupting means for interrupting the signal or signals on said transmission medium; and

(e) substantially interrupting the signal or signals on said transmission medium by said signal interrupting means in response to a defect in any one of said objects.

4,331,960

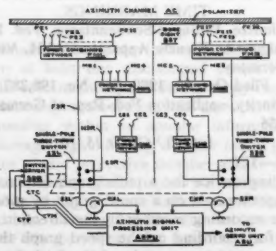
AUTOMATIC TRACKING METHODS AND APPARATUS

Carl W. Gerst, Jr., Skaneateles, and Hugh A. Hair, Fayetteville, both of N.Y., assignors to Anaren Microwave, Incorporated, Syracuse, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,548

Int. Cl.³ G01S 5/02

U.S. Cl. 343—117 R 10 Claims



1. A tracking receiver system for indicating the bearing of a target comprising: a first antenna element array, said array having first and second sub-arrays symmetrically disposed about a boresight; a first power combining network means for coupling the elements of the first sub-array of said first array to a first output port; a second power combining network means for coupling the elements of the second sub-array of said first array to a second output port; phase discriminator means having first and second input ports respectively connected to said first and second output ports and an output means for giving a representation of the angular difference of the signals present at its input ports; and means connected to said output means for transmitting a first type signal when the angular difference is greater than a predetermined value and for transmitting a second type signal when the angular difference is less than said predetermined value.

4,331,961

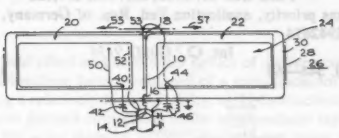
WINDSHIELD ANTENNA

Ross A. Davis, 95-461 Kaulia Pl., Mililani Town, Hi. 96789

Filed Apr. 8, 1980, Ser. No. 138,853

Int. Cl.³ H01Q 1/32

U.S. Cl. 343—704 12 Claims



1. A conductive-body antenna system responsive to both E-field and H-field components of radio signals, including:

an electrically conductive body having at least one opening therein to form a conductive edge,

a closed exciter loop member of material having good electrical conductivity positioned adjacent to said conductive edge along substantially its entire length and coupled closely thereto for R-F purposes;

at least one driven loop positioned within said closed exciter loop member and coupled thereto for R-f purposes; and,

means for coupling said driven loop to external radio apparatus.

4,331,962

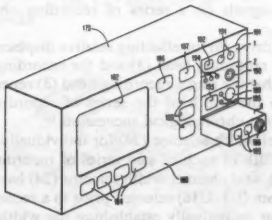
DEVICE FOR GATING A BLANKING BAR INTO A RECORDING OF ANALOG SIGNALS

Leopold Neumann, Lexington, Mass., assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,538

Int. Cl.³ G01D 7/02

U.S. Cl. 346—33 ME 17 Claims



1. Device for gating a blanking pulse into a recording of analog signals on the recording section of a picture recording device, the analog signals being supplied (in the so-called fixed mode) by a frame repeat memory at least for a presettable period of time as a frozen waveform with circular updating and the blanking bar precessing through the recording, separating the signal beginning from the signal end in the signal waveform, characterized such that the frame repeat memory (24) contains as information for the blanking bar (ST) a stored blanking bar code (281) which, when given out from the frame repeat memory, is sent on the one hand to an actuation pulse

generator (282) and, on the other, to a pulse generator (47) which upon appearance of the blanking code generates an analog pulse of fast rise time whose amplitude moreover is much higher than the highest amplitude of the analog signal (A) normally to be expected, and which sends this fast rise analog pulse of especially high amplitude to the y-deflection system (48) of the remote picture recording device, while simultaneously the z-generator (49) is activated by the scanning pulse generator (282) for application of a z-actuation pulse to the z-control section of the local picture recording device (28).

4,331,963
RECORDING DEVICE

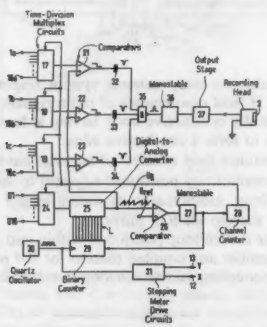
Bo Dahlström, Vällingby, and Sven G. Olsson, Sollentuna, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,120

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942614

Int. Cl.³ G01D *9/36*

U.S. Cl. 346—62 **14 Claims**



1. A recording device comprising a recording element and recording carrier which can be displaced relative to one another for the purpose of recording measurement signals on the recording carrier, the recording element being designed for the purpose of recording vessel recording measurement signals on the recording carrier,

wherein the improvement comprises

a single recording head (3) serving as the recording element for effecting time multiplex recording of measurement signals on a series of recording channels (e.g. I–IV),

a motor drive (6) for effecting relative displacement of the single recording head (3) and the recording carrier (4) such that the single recording head (3) repeatedly scans across the width of the series of recording channels (I–IV) in chronological succession,

a channel width selector (24) for individually controlling the width of each of said series of recording channels (I–IV), said channel width selector (24) having a width program (U1–U16) selected prior to a recording operation for individually establishing the widths of the respective recording channels,

a width-selection-to-voltage converter (25) connected with the output of said channel width selector (24) and responsive to the width program thereof (U1–U16) for cyclically generating a ramp waveform (U_R) of progressively changing voltage value during scanning of each of said recording channels by said single recording head (3) with the rate of change of the ramp waveform during scanning of each respective channel being a function of the width selected for such channel, and

signal multiplex means comprising a comparator circuit (21–23) for comparing different ones of the recording measurement signals with respective cycles of said ramp waveform (U_R) and operable for supplying a recording signal to the recording head (3) for recording a signal point on the recording carrier in response to equality of the voltage values under comparison.

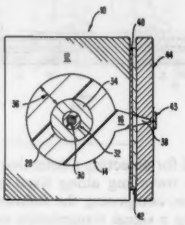
4,331,964
DUAL CAVITY DROP GENERATOR

David C. VanLokeren, Boulder, Colo., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,468

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **14 Claims**



1. A drop generator for generating one or more droplet streams for printing on a recording media comprising:

a first support means having a cavity therein;

a means for generating a disturbance disposed within said cavity;

a resonance cavity disposed between the outer surface of the means for generating the disturbance and the inner surface of the cavity;

an acoustical rubber disposed within the resonance cavity and operable to transmit pressure waves outputted by the disturbance means;

an ink cavity disposed external to the resonance cavity, said ink cavity being in acoustical communication with the resonance cavity;

means to acoustically couple the resonance cavity with the ink cavity;

means for supplying pressurized ink into said ink cavity; and

a nozzle support plate having one or more apertures therein disposed so that the apertures are in fluidic communication with the ink cavity.

4,331,965
RECORDING DEVICE FOR A TACHOGRAPH WITH TIME MARKINGS

Hartmut Schultze, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,287

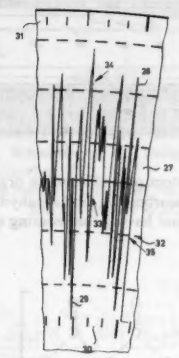
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943056

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—121 **4 Claims**

1. Recording device for a tachograph for recording time markings superimposed on a speed graph by momentary deflection of a recording member in the direction of the time coordinate, for recording on the speed graph the recording member is actuated transversely of the feed direction of the recording medium driven in synchronization with actually elapsed time, wherein said recording device comprises a pair of stationary guide rods, a slide movably supported on said guide rods and arranged to be positioned parallel to the recording support surface of a tachograph, a recording member supported on said slide and arranged to be disposed substantially perpendicularly to the recording support surface, means for biasing said recording member against a recording support

surface, an electromagnet arranged to be excited by a pulse generator capable of delivering time-constant pulses, said electromagnet positioned relative to said slide for deflecting said slide in the direction of the time coordinate of the recording



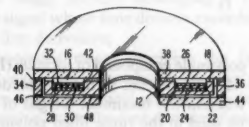
support surface, and said slide being mounted on said guide rods so that said slide displaces said recording member laterally relative to said recording support surface due to said means biasing said recording member against the recording support surface.

4,331,966

INFORMATION STORAGE DEVICE AND METHOD OF FORMING SAME

Erik Moe, Huntington Beach, Calif., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Oct. 6, 1980, Ser. No. 194,384
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—137 **12 Claims**



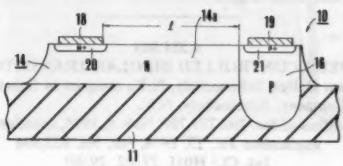
1. An information storage device comprising: a disc-shaped base member; at least one disc-shaped protective member overlying said base member; a radiant-energy-responsive recording medium disposed between said base member and said protective member within an annular information storage region, said storage region having an inner radius greater than an inner radius of said protective member and an outer radius less than an outer radius of said protective member; an annular support member having an inner radius greater than an outer radius of said base member, but less than said outer radius of said protective member; means for fastening the outer radius portion of said protective member to said annular support member; and means for fastening said protective member to said base member radially inwardly from said storage region; whereby said information storage region is enclosed by the the combination of said base member, said protective member, said support member and said fastening means and a circumferential gap is provided between said annular support member and said base member for permitting relative radial movement between said base member and said protective member.

4,331,967

FIELD EFFECTS SEMICONDUCTOR DEVICES

Katsuhiko Kurumada, Tokyo; Kazuyoshi Asai, Iruma, and Yasunobu Ishii, Hoya, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Japan

Filed Jan. 31, 1980, Ser. No. 117,186
Claims priority, application Japan, Nov. 28, 1979, 54/152888
Int. Cl.³ H01S *3/18*
U.S. Cl. 357—3 **5 Claims**



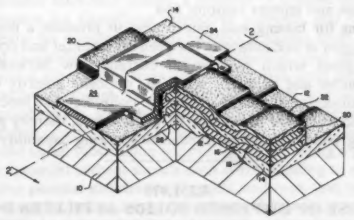
1. In a field effect semiconductor device of the type comprising a semiinsulator layer composed of a semiconductor material having a relatively high resistivity, an N conductivity type active layer formed contiguous to the semiinsulator layer and made of the same material as said semiinsulator layer, said N conductivity type active layer acting as a channel, a cathode electrode and an anode electrode which are disposed on a surface of said active layer with a predetermined distance therebetween, said cathode electrode being in ohmic contact with said active layer, and means for enabling a voltage to be applied across said anode and cathode electrodes to cause the electron current flowing thrugh said active layer to vary, the improvement which comprises a P conductivity type region of a different conductivity type from that of the active layer, said P conductivity type region extending from a surface of said active layer beneath said anode electrode through said active layer and into said semi-insulator layer to a predetermined depth, said P conductivity type region being surmounted by a P+ type conductivity region underlying said anode electrode.

4,331,968

THREE LAYER FLOATING GATE MEMORY TRANSISTOR WITH ERASE GATE OVER FIELD OXIDE REGION

William M. Gosney, Jr., McKinney, and Vernon G. McKenny, Carrollton, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Mar. 17, 1980, Ser. No. 130,853
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **2 Claims**



1. A field effect transistor storage device comprising:
a semiconductor substrate having a source region, a channel region, and a drain region with a field oxide region surrounding said source, channel, and drain regions;
a first dielectric layer over at least said channel region;
a floating gate comprising a first polycrystalline silicon layer on said first dielectric layer, and overlying said channel region and a portion of said field oxide region;

a second dielectric layer covering the top and edges of said floating gate;

a control gate comprising a second polycrystalline silicon layer on said second dielectric layer and overlying said floating gate;

a third dielectric layer covering the top and edges of said control gate; and

an erase gate comprising a conductive layer adjacent at least one edge of said floating gate which overlies the field oxide region, said erase gate also overlies at least a portion of said control gate.

4,331,969

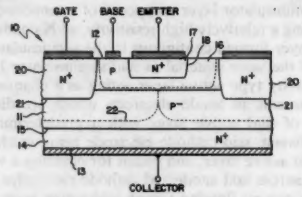
FIELD-CONTROLLED BIPOLAR TRANSISTOR

B. Jayant Baliga, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 739,750, Nov. 8, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 923,936

Int. Cl.³ H01L *27/02, 29/80*

U.S. Cl. 357—43 **6 Claims**



1. An electric field controlled three layer bipolar transistor having a bidirectional voltage blocking capability between the collector and emitter electrodes, said transistor comprising:

a semiconductor substrate of one-conductivity type and having opposed major surfaces;

a collector region of opposite conductivity type in one of said major surfaces;

an emitter region of opposite conductivity type in the other major surface;

a base region of said one-conductivity type surrounding said emitter region;

electrode means contacting each of said collector region and said emitter region for applying across said collector region and said emitter region of said transistor a bidirectional voltage in which one polarity voltage causes said transistor to exhibit a bipolar transistor voltage-current characteristic and a forward blocking capability dependent on the collector-base breakdown voltage;

a gate region of opposite conductivity type surrounding said base and emitter regions; and

means for biasing said gate region to produce a depletion region in said substrate between said emitter and collector regions which pinches off current flow between said emitter and collector when the opposite polarity of said bidirectional voltage causes the collector-base junction of said transistor to become forward biased, thereby providing said transistor with reverse blocking capability.

4,331,970

USE OF DISPERSED SOLIDS AS FILLERS IN POLYMERIC MATERIALS TO PROVIDE MATERIAL FOR SEMICONDUCTOR JUNCTION PASSIVATION

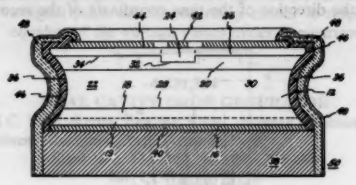
Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 943,330, Sep. 18, 1978, abandoned. This application Oct. 27, 1980, Ser. No. 201,143

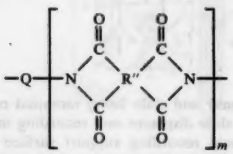
Int. Cl.³ H01L *23/28, 29/30, 39/02*

U.S. Cl. 357—72 **9 Claims**

1. A rutile filled polymer system for use as a surface coating to prevent surface breakdown of semiconductor devices comprising rutile and a precursor solution of a polymer material which is one selected from the class of materials consisting of

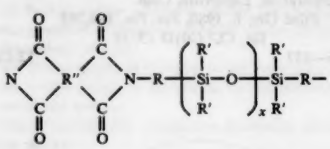


(a) a reaction product of a silicon-free organic diamine and an organic tetracarboxylic acid dianhydride which when cured is a polymer having the recuring structural units of the formula,



(I)

(b) a reaction product of a silicon-free organic diamine, an organic tetracarboxylic acid dianhydride and an amino terminated polysiloxane, which is a polymer which, when cured, has the recuring structural units of formula (I) with from 15 to 45 mol percent intercondensed structural units of the formula,



(II)

and

(c) a blend of polyimide compound of formula (I) above with from 15 to 45 mole percent of the polyimide of formula (II) above wherein the maximum weight of rutile solids which can be used in the rutile filled polymer system to provide a cured void free polymer is expressed by the formula,

$$\left[\frac{Ws}{Wps}\right]_{max} = 3.21\ WFp$$

wherein:

Ws is the weight of rutile, Wps is the weight of polymer solution (precursor) and WFp is the weight fraction of polymer in the precursor solution,

R is a divalent hydrocarbon radical derived from bis(γ-amino propyl)tetramethyldisiloxane;

R′ is a monovalent hydrocarbon radical derived from bis(γ-amino propyl)tetramethyldisiloxane;

R″ is a tetravalent organic radical derived from benzophenone tetracarboxylic acid dianhydride;

Q is a divalent silicon-free organic radical which is the residue of methylene dianiline;

x is an integer having a value greater than zero, and

m and n are integers greater than one, and may be equal to each other, and

where the rutile is admixed therein and distributed

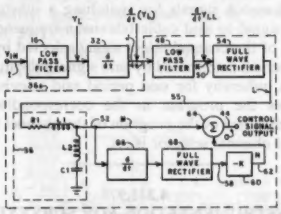
throughout the precursor solution prior to the application of the solution to the surface of the semiconductor device.

4,331,971

MODE DECISION CONTROLLER FOR SELECTIVELY ACTUATING A CHROMINANCE BANDWITH ENHANCEMENT IN A TELEVISION RECEIVER

Wayne E. Bretl, Schaumburg, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 19, 1980, Ser. No. 208,211
Int. Cl.³ H04N 9/535
U.S. Cl. 358—37 **10 Claims**



1. In a television receiver which detects a video signal having a relatively wideband luminance element and a relatively narrow band chrominance element, and which develops a first derivative of the low frequency components of at least a selected one of the luminance and chrominance elements for implementing a chrominance bandwidth enhancement scheme, a mode decision controller for selectively activating the enhancement scheme, comprising:

filter means receiving the first derivative for removing components therefrom which extend above a selected frequence range, thereby developing a frequency-limited output signal whose time domain exceeds the time domain of the first derivative;

signal processing means receiving the frequency limited output signal for compressing its time domain so as to develop a control signal whose time domain is substantially equivalent to the time domain of said first derivative; and

means responsive to said control signal for activating the enhancement scheme.

4,331,972

LIGHT VALVE, LIGHT VALVE DISPLAY, AND METHOD

Jan A. Rajchman, 268 Edgerstoune Rd., Princeton, N.J. 08540

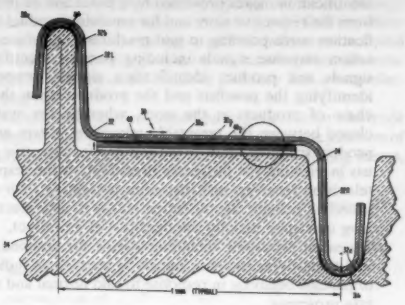
Filed Nov. 9, 1978, Ser. No. 959,055
Int. Cl.³ H04N 9/31
U.S. Cl. 358—60 **81 Claims**

59. A device for image display comprising:

(1) a set of lines in a first direction comprising line segments, each segment having a transparent portion,

(2) a second set of lines in a second direction transverse to said first direction and comprising line segments each segment having a transparent portion,

(3) the transparent segment portions of said first and second sets overlapping to form at their intersection elements and having facing, juxtaposed diffraction gratings of the same periodicity and parallel diffraction lines whereby each element forms a light valve, and



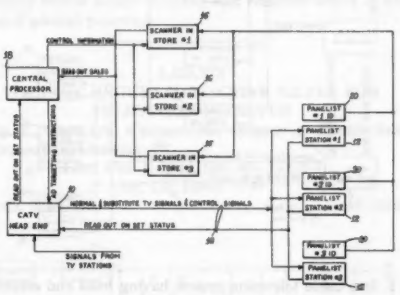
(4) means to apply an electrical signal individually to the lines of said first set to move said first set line segments in a direction perpendicular to said gratings.

4,331,973

PANELIST RESPONSE SCANNING SYSTEM

Gerald J. Eskin, Iowa City; Penny H. Baron, North Liberty, both of Iowa, and John Malec, North Barrington, Ill., assignors to Iri, Inc., Chicago, Ill.

Filed Oct. 21, 1980, Ser. No. 199,257
Int. Cl.³ H04N 7/40
U.S. Cl. 358—84 **9 Claims**



1. A panelist response scanning system comprising a plurality of product scanning units for location at respective stores, a targetable television system, a plurality of panelist identification means for identifying respective panelists, and a central processor for coupling to said product scanning units,

said targetable television system including head end means and a plurality of receiving means, said head end means including means for transmitting normal television program signals, substitute program signals and signal substitution control signals to said plurality of receiving means, said signal substitution control signals including a plurality of panelist address signals each corresponding to a respective panelist identification means, and each said receiving means including means for selectively tuning a television receiver to a respective normal television channel to display a respective normal television program, means for generating a local panelist address signal corresponding to a respective panelist identification means, and means for selectively substituting substitute program signals in lieu of normal television program signals for display of a substitute program on said television receiver upon receipt of signal substitution control signals including a panelist address signal corresponding to said local panelist address signal,

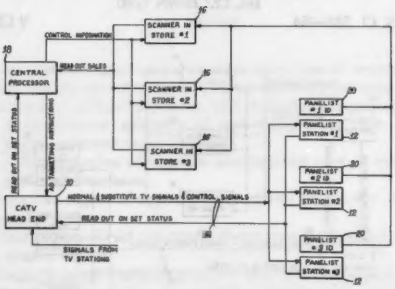
each of said product scanning units having means for receiving panelist identification corresponding to a said panelist identification means presented by a purchaser of products from the respective store and for receiving product identification corresponding to said products to produce transaction response signals including panelist identification signals and product identification signals respectively identifying the panelists and the products upon the purchase of products at the store, whereby the system is closed between the targetable television system and the product scanning units by the acts of the respective panelists in viewing the programs presented on the respective television receivers and thereafter presenting their corresponding panelist identification means to a product scanning unit upon making the purchase of a product,

said central processor including means for responding to said transaction response signals to provide an indication of panelist behavior in response to said normal and substitute programs.

4,331,974
CABLE TELEVISION WITH CONTROLLED SIGNAL SUBSTITUTION

Ned W. Cogswell, Salisbury, Md.; Gerald J. Eskin, Iowa City, Iowa, and W. Andrew Wright, Jr., Bethlehem, Pa., assignors to Iri, Inc., Chicago, Ill.

Filed Oct. 21, 1980, Ser. No. 199,256
Int. Cl.³ H04N 7/10
U.S. Cl. 358—86 **16 Claims**



1. In a cable television system having head end means at a head end station, transmission cable, and a plurality of receiving means at respective panelist receiving stations, said head end means including means for applying normal television program signals in normal television channels to said transmission cable, and each of said receiving means including panelist channel selector means under control of a viewer for selecting a normal channel for viewing of a respective normal television program, said panelist channel selector means producing a panelist channel select signal indicative of said television channel, a television receiver, and a cable television frequency converter for receiving television program signals from said transmission cable and responsive to a channel select signal for selectively converting received television program signals in the respective television channel to converted television program signals acceptable to said television receiver and applying the respective converted television program signals to said television receiver:

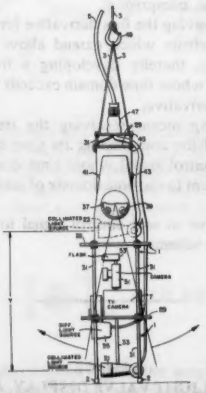
a targetable signal substitution system comprising means at said head end station for applying substitute television program signals in at least one substitute channel to said transmission cable, and means at said head end station for applying signal substitution control signals to said transmission cable, said signal substitution control signals including a plurality of different terminal command signals each of which includes a panelist address signal for identifying a respective panelist receiving station, and said signal substitution control signals further including a normal channel identification signal for identifying a normal channel into which a substitute television program is to be switched; and

control means at each panelist receiving station responsive to said signal substitution control signals for selectively switching a substitute television program into a normal channel, said control means including means for generating a local panelist address signal, substitute channel selector means for producing a substitute channel select signal corresponding to a substitute channel, first comparison means for comparing each received panelist address signal with said local panelist address signal and producing a first match signal when said compared address signals match, second comparison means for comparing said received normal channel identification signal with said panelist channel select signal and producing a second match signal when said compared channel identification and channel select signals match, and means responsive to said first and second match signals for switching a substitute channel select signal to said cable television frequency converter in lieu of the channel select signal selected by the viewer for a period determined by said signal substitution control signals, whereby for said period said television receiver receives the program in the corresponding substitute channel in lieu of the program of the channel to which the normal channel selector is set.

4,331,975
INSTRUMENTATION FOR SURVEYING UNDERGROUND CAVITIES

Walter G. Krawza, Lakeville, and George A. Savanick, Apple Valley, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 9, 1980, Ser. No. 195,539
Int. Cl.³ H04N 7/18
U.S. Cl. 358—100 **2 Claims**



1. A system for surveying the surfaces forming underground cavities comprising:

a rigid frame assembly for supporting instrumentation;

means for raising and lowering said frame into an aperture which leads to the cavity whose defining surface is to be determined;

a television camera mounted on said frame and capable of being fit through said aperture; said television camera being operatively connected to a remote monitor to allow viewing thereat of the cavity;

a collimated light beam assembly mounted on the frame assembly, said beam assembly having two aligned sources of light beams spaced a known distance apart from each

other and capable of projecting beams in the same direction;

means for tilting one of said sources of light beams relative to the frame while the other source is held rigid with respect to the frame to thereby superimpose the two beams upon each other and form a spot on the cavity surface under observation; and

means remote from said beam assembly to determine the angle of tilt of said tiltable light source whereby the distance from the two light sources to the spot form on the cavity's surface may be determined based on the angle of tilt and the known distance the sources are spaced apart.

4,331,976

HIGH DENSITY RECORDING SYSTEM USING SIDE-BY-SIDE INFORMATION AND SERVO TRACKS

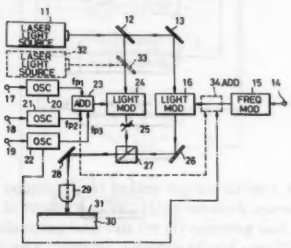
Hisao Kinjo, and Keiji Ozawa, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 6, 1977, Ser. No. 785,095

Claims priority, application Japan, Apr. 8, 1976, 51-38809; Oct. 26, 1976, 51-127767

Int. Cl.³ H04N 5/76

U.S. Cl. 358—128.6 **8 Claims**



1. An information signal recording system comprising:

means for rotating a recording disc;

means for obtaining two light beams;

a first light modulating means responsive to an information signal for modulating one of said two light beams;

means for producing and sequentially switching reference signals responsive to a plurality of different kinds of reference signals, said sequential switching occurring periodically responsive to each rotational period of the disc rotating means;

a second light modulating means responsive to the produced reference signals for modulating the other of said two light beams; and

recording means for forming an information signal track on a recording disc responsive to the light beam modulated by the first light modulating means and for simultaneously forming a reference signal track on an intermediate part of a disc between center lines of adjacent information signal tracks responsive to the light beam modulated by the second light modulating means.

4,331,977

PORTABLE TELEVISION CONTROLLER WITH ELECTRONIC SWITCHING

William E. Cohn, Skokie, and Philip J. Nowaczyk, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 15, 1980, Ser. No. 216,692

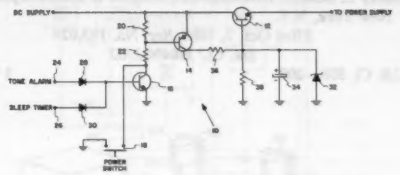
Int. Cl.³ H04N 5/44

U.S. Cl. 358—188 **11 Claims**

1. In a portable television receiver operable alternatively from a first source of alternating current line derived voltage and from a second lower, direct current voltage source including a battery, an electronic switching circuit for turning on said television receiver automatically by means of a first timed direct current signal provided by clock signal generating means or manually comprising:

first transistor switching means coupling said second voltage source to television receiver circuitry, said first transistor switching means including a collector electrode coupled to said second voltage source, an emitter electrode coupled to said television receiver circuitry and a base electrode;

second transistor control means having a collector electrode coupled via a plurality of resistive means to the junction of said second voltage source and said first switching means,



an emitter electrode coupled to neutral ground potential and a base electrode coupled to said clock signal generating means for receiving said first timed direct current signal;

third transistor coupling means having a collector electrode coupled to the base electrode of said first switching means, an emitter electrode coupled to the junction of said second voltage source and the collector of said first switching means, and a base electrode coupled to said resistive means; and

manual switch means coupling said resistive means to neutral ground potential.

4,331,978

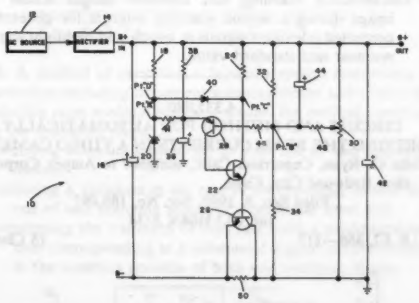
VOLTAGE REGULATOR/ACTIVE FILTER FOR TELEVISION RECEIVER

Philip J. Nowaczyk, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 3, 1980, Ser. No. 212,371

Int. Cl.³ H04N 5/44

U.S. Cl. 358—190 **10 Claims**



1. A voltage regulator/active filter circuit in a television receiver for precisely regulating a DC input voltage and removing an alternating current component therefrom when said input voltage fluctuates comprising:

a fixed DC reference level source;

voltage level tracking means coupled to said DC input voltage for providing a tracking signal displaced a predetermined voltage level below the DC input voltage;

means for comparing said tracking signal level with said DC reference level and for generating a variable DC reference level is response to said tracking signal when said tracking signal is less than said reference voltage level;

AC filter means for removing AC signal components exceeding a predetermined AC signal level; and

switch means for coupling said AC filter means in circuit with said variable DC signal generating means when said tracking signal is less than said predetermined voltage level for removing AC fluctuations from said variable DC signal in providing a level DC output signal to television receiver circuitry when said input voltage fluctuates.

4,331,979

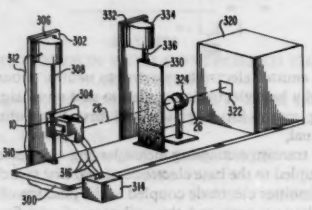
LINE-SCAN STILL IMAGE REPRODUCER

Sidney L. Bendell, Riverton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,024

Int. Cl.³ H04N *3/02*

U.S. Cl. 358—209 **1 Claim**



1. A method for generating a television video signal from a still image, comprising the steps of:

mechanically scanning a line-scan imager across the image during a first scanning interval;

generating uncorrected television signals having highlight levels established by the mechanical scan of said imager across said image during said first scanning interval;

coupling said uncorrected television signals to highlight detection means for generating a highlight signal representative of the peak value attained by said uncorrected television signals during said mechanical scanning;

applying said highlight signal to a light-changing means for stabilizing said peak value near a standard value; and

mechanically scanning said line-scan imager across the image during a second scanning interval for generating corrected television signals in which said highlight signals are near said standard value.

4,331,980

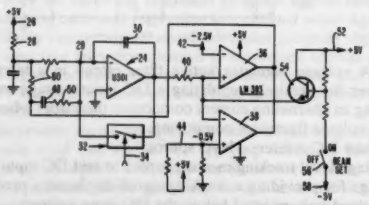
CIRCUIT AND METHOD FOR AUTOMATICALLY SETTING THE BEAM CURRENTS IN A VIDEO CAMERA

John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 8, 1980, Ser. No. 185,097

Int. Cl.³ H04N *5/34*

U.S. Cl. 358—217 **15 Claims**



1. A circuit for automatically setting the beam current of a video camera pickup tube to preclude the generation of blooming in the presence of highlights, comprising;

means for generating a sawtooth waveform for driving the beam;

means for modifying the sawtooth to selectively increase the speed of scan over a given area of scan; and

means for increasing the beam current to a given current level sufficient to successfully remove the blooming.

4,331,981

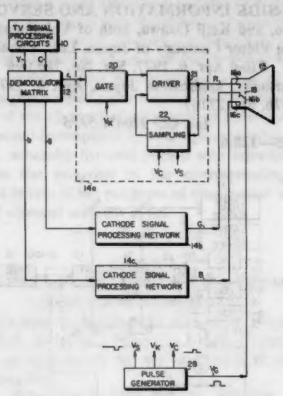
LINEAR HIGH GAIN SAMPLING AMPLIFIER

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,595

Int. Cl.³ H04N *5/68*

U.S. Cl. 358—243 **16 Claims**



1. A circuit for sampling an input signal having a reference interval and a signal interval including a characteristic to be sampled, comprising:

a transconductance amplifier with a signal input for receiving said input signal and an output for providing output currents varying in accordance with signal voltages applied to said signal input;

a charge storage device;

a switching network coupled to said amplifier output and to said charge storage device;

a clamping network coupled to said amplifier signal input;

a source of timing signals including a clamping interval component corresponding to said reference interval of said input signal, and a sampling interval component corresponding to said signal interval of said input signal; and

means for utilizing said timing signals to activate said clamping network during said clamping intervals and to inactivate said clamping network during said sampling intervals; and to render said switching network operative for coupling amplifier output currents to said charge storage device during said sampling intervals so that said storage device develops a signal sample in response to said amplifier output currents, and for decoupling said amplifier output from said charge storage device during said clamping intervals.

4,331,982

SAMPLE AND HOLD CIRCUIT PARTICULARLY FOR SMALL SIGNALS

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,597

Int. Cl.³ H01N *5/68*

U.S. Cl. 358—243 **16 Claims**

1. A circuit for sampling an input signal having a reference

interval and a signal interval including a characteristic to be sampled, comprising:

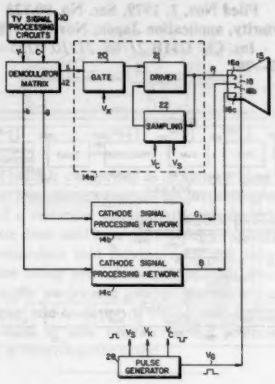
an amplifier with a signal input and an output;

a signal processing network;

a clamping network coupled to said amplifier signal input;

a switching network coupled to said amplifier output, to said clamping network, and to said signal processing network;

a source of timing signals including a clamping interval component corresponding to said reference interval of said input signal, and a sampling interval component corresponding to said signal interval of said input signal; and



means for coupling said timing signals to said switching network to render said switching network operative during said clamping intervals for (1) coupling said amplifier output to said clamping network at said amplifier signal input via a negative feedback path, and (2) decoupling said amplifier output from said signal processing network; and to render said switching network operative during said sampling intervals for (3) disabling said negative feedback path, and (4) coupling said amplifier output to said signal processing network.

4,331,983

FACSIMILE SIGNALLING METHOD

Jack D. Burton, Orlando, and Stephen D. Fisher, Altamonte Springs, both of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,487

Int. Cl.³ H04N *1/32*

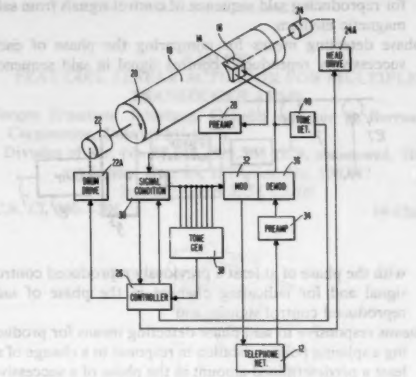
U.S. Cl. 358—257 **11 Claims**

1. In a facsimile system wherein the calling party unit has the capability of transmitting a message to a called party unit, or alternatively, of directing an unattended called party unit to transmit a message to the calling party unit, a method of directing said called party unit to transmit rather than to receive comprising:

establishing a communication link between said calling party and said called party;

detecting at least one of a plurality of incoming identification signals directed to said calling party from said called party, said incoming identification signals being spaced apart by a predetermined interval;

dispatching an outgoing master/slave indicator signal from said calling party to said called party in the interval between the last detected incoming identification signal and the next expected incoming identification signal.



4,331,984

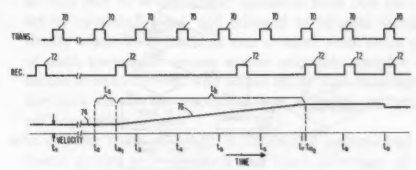
METHOD AND APPARATUS FOR SYNCHRONIZING FACSIMILE TRANSMISSIONS

T. James Bryan, Altamonte Springs; Jack D. Burton, Orlando, and F. Peter Tyrrell, Altamonte Springs, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,341

Int. Cl.³ H04N *1/36*

U.S. Cl. 358—275 **14 Claims**



1. A method of operating a facsimile system comprising a transmitter including document scanning means and a receiver including copy medium scanning means, the method comprising the following steps:

initiating scanning motion for at least one of said scanning means;

initiating a variation in the rate of the scanning motion for one of said scanning means at a particular time; and

continuing the variation of said rate until a predetermined time corresponding to a substantial degree of coincidence in the scanning position of both said scanning means.

4,331,985

SPLICING-POINT DETECTION APPARATUS AND METHOD

Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,093

Claims priority, application Japan, Jul. 19, 1979, 54-91855

Int. Cl.³ G11B *27/02*

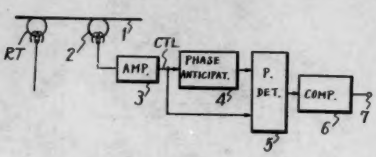
U.S. Cl. 360—13 **13 Claims**

1. Apparatus for detecting a splicing point in a magnetic medium having information signals recorded thereon and on which a sequence of normally periodic control signals has been recorded separate from said information signals, comprising:

reproducing transducer means for reproducing said information signals;

pickup means apart from said reproducing transducer means for reproducing said sequence of control signals from said magnetic medium;

phase detecting means for comparing the phase of each successively reproduced control signal in said sequence



with the phase of at least a previously reproduced control signal and for indicating changes in the phase of said reproduced control signals; and

means responsive to said phase detecting means for producing a splicing point indication in response to a change of at least a predetermined amount in the phase of a successive predetermined number of said reproduced control signals, as indicated by said phase detecting means.

4,331,986

APPARATUS AND METHOD FOR MAGNETIC TAPE DRIVE CONTROL

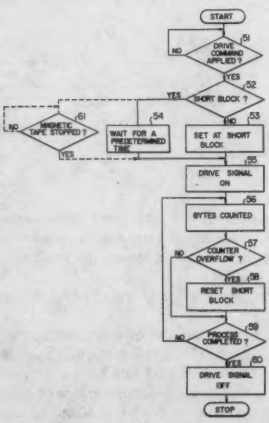
Masahito Mori, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,730

Claims priority, application Japan, Apr. 4, 1979, 54/39829

Int. Cl.³ G11B *15/18, 19/02, 17/00*

U.S. Cl. 360—71 **12 Claims**



1. Magnetic tape controlling apparatus for use in a data read and write system, receiving a magnetic tape transporting instruction and generating a first signal by which a magnetic tape is transported, comprising:

a counter counting pulse signals during the presence of said instruction, and generating a second signal indicating that the count value of said counter is more than a predetermined number,

memory means connected to said counter for storing said second signal,

delay means for generating a third signal which rises at a delayed beginning point of said instruction and falls at an ending point of said instruction,

said memory means being cleared at a rising point of said third signal, and

means for generating said first signal when said third signal is existing or when said memory means is storing said second signal during the presence of said instruction.

4,331,987

SELF-COMPENSATING DEVICE FOR A MAGNETIC DISC APPARATUS

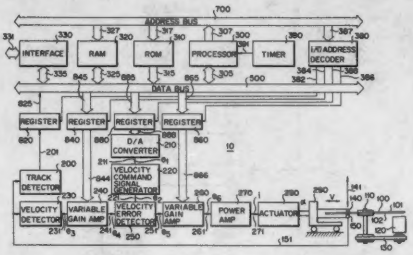
Yasutaka Oda, and Hiromi Hamaoka, both of Oume, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 1, 1979, Ser. No. 90,123

Claims priority, application Japan, Nov. 8, 1978, 53/136654

Int. Cl.³ G11B *21/08, 21/10, 5/55*

U.S. Cl. 360—78 **9 Claims**



1. In a magnetic disc apparatus comprising magnetic disc means with a number of data tracks concentrically arranged on a surface thereof, read/write transducer means for reading out data from or writing data into said data tracks, actuator means for reciprocally moving said read/write transducer means across said data track, velocity detecting means for detecting the velocity of said transducer means to produce a velocity signal, velocity error detector means responsive to said velocity signal and a velocity command signal to produce a velocity error signal and drive means responsive to said velocity error signal to accelerate or decelerate said actuator means so as to make said velocity error signal small;

self-compensating apparatus for compensating for a characteristic of said velocity detecting means comprising compensator means responsive to said velocity signal to produce a compensated velocity signal, said velocity error detecting means being responsive to said compensated velocity signal and a velocity command signal to produce a compensated velocity error signal, said drive means being responsive to said compensated velocity error signal, means for detecting the position of the transducer means relative to the data tracks, and control means for supplying said velocity command signal, and for adjusting said compensator means responsive to said means for detecting and a given velocity command signal.

4,331,988

CASSETTE BASE FOR A VIDEO TAPE RECORDER

Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Co., Ltd., Osaka and Efuti Giken Co., Ltd., Kanagawa, both of, Japan

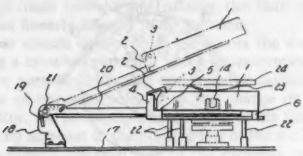
Filed May 8, 1980, Ser. No. 147,822

Int. Cl.³ G11B *15/00, 23/04*

U.S. Cl. 360—96.6 **4 Claims**

1. In a cassette mounting base for a video tape recorder of the type wherein the cassette is to be received within an upwardly tilted cassette case mounted on the chassis of a recorder to be tilted downwardly in said case to a predetermined position with respect to said chassis for operation, said cassette being provided with access openings in the bottom thereof for

the driving reels and at least one take-out means provided on the recorder for operating the tape spools in the cassette and for withdrawing the tape from the cassette to be loaded into engagement with the recorder magnetic transducing head means, said cassette also being provided with a pivotally mounted lid along one side normally biassed to a closed position, the recorder being provided with an upwardly projecting member to open said lid upon downward movement of the cassette in the tiltable case to said predetermined position, the



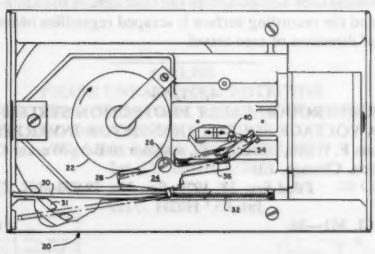
improvement which comprises a mounting base plate to be mounted by at least three vertical legs projecting upward from the chassis of a recorder horizontally positioned below said tiltable cassette case, said base plate being provided with openings to accommodate said driving reels and take-out means, said base plate being provided with at least three integrally formed upwardly projecting support means for opening said lid of a cassette and to support the cassette independently of the cassette case in said predetermined position when the cassette case is downwardly tilted.

4,331,989

MAGNETIC DISC FILE HAVING DUAL LOCK MECHANISM

Stephen R. Viskochil, San Jose, Calif., assignor to Priam Corporation, San Jose, Calif.

Filed May 15, 1980, Ser. No. 149,972
Int. Cl.³ G11B *19/22, 17/00, 25/04*
U.S. Cl. 360—97 **7 Claims**



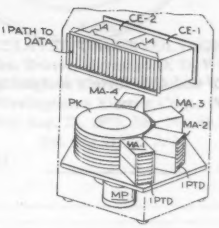
1. In a disc file having a housing, a disc rotation motor mounted in the bottom portion of said housing, and a magnetic head carriage assembly mounted within said housing for linear translation, a lock for preventing rotation of said motor and translation of said carriage assembly comprising a first lock arm pivotally mounted on the bottom portion of said housing, one end of said lock arm including means for engaging said motor, an operable lever attached to said lock arm for pivoting said one end into engagement with said motor, a connector link having one end pivotably mounted through said bottom portion and the opposite end engaging an end of said first lock arm whereby rotation of said first lock arm pivots said connector link, a second lock arm for said carriage assembly within said housing, and means connecting said second lock arm to said connector link whereby pivoting of said connector link rotates said second lock arm into engagement with said carriage assembly when said first lock arm is pivoted into engagement with said motor.

4,331,990

FLAT COIL LINEAR ACTUATOR FOR MULTIPLE TRANSDUCER ARMS

Jorgen Frandsen, Winnipeg, Canada, assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 85,945, Oct. 18, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 106,847
Int. Cl.³ G11B *5/54, 21/08*
U.S. Cl. 360—106 **14 Claims**



1. An improved disk file including multiple disk means, each comprising one or more recording disks, each disk presenting at least one recording face which includes "1 through n" adjacent track sites, each track site having a different radial location relative to the common center axis of the disk;

and two or more radially movable transducer/actuator arrays, each array being disposed at a unique location about the disk means and being arranged and adapted to present at least one R/W transducer means to each disk face, or set of opposing faces, and adapted to operate independently whereby to translate one or more read/write gaps of each transducer means across selectibly-variable distances so as to "cover" and access all, or a given subset of, the track sites on the associated face, at least in its "principal" operating mode;

whereby the track-coverage is differently apportioned between arrays and operation and track coverage of one such array is not necessarily related to that of any other such array and whereby a shift between track sites is enabled such as to facilitate "multi-access" to every track site, avoiding the continual need to translate any one transducer means across the full span of said 1 through n track sites and also whereby this file presents a capability for "multiple path to data" and for multiple transducer coverage of every track site.

4,331,991

HEAD ACTUATOR FOR MAGNETIC DISK DRIVE

James H. Morehouse, Jamestown, and Mark A. Swenson, Broomfield, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

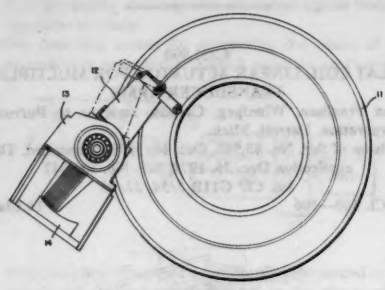
Filed Jul. 2, 1980, Ser. No. 165,298
Int. Cl.³ G11B *5/55, 21/08*
U.S. Cl. 360—106 **9 Claims**

1. An actuator for the head assembly of a magnetic disk drive comprising:

a rotating coil wound with at least three torque producing sides including a side along the extreme arc of rotation and coupled to said head assembly to position it with respect to a magnetic disk when the coil is energized;

a housing within which said coil rotates; and

a permanent magnetic member on three torque producing sides of said coil, including the side along the extreme arc



of rotation of said coil, thereby increasing the torque of said actuator.

4,331,992

METHOD AND APPARATUS FOR ELIMINATING CROSSTALK IN MAGNETIC TAPE RECORDERS

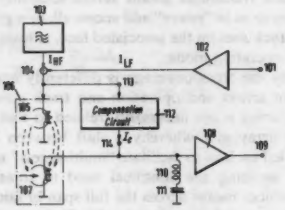
Karl-Heinz Klein, Wiesbaden-Erbenheim, and Reinhard Kutzner, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118,747

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907097; Nov. 10, 1979, 2945491

Int. Cl.³ G11B *5/20*

U.S. Cl. 360—124 **4 Claims**



1. An apparatus for compensating crosstalk between a recording head (105) and a playback head (107) of a multi-track, multi-head magnetic tape recording and playback system, said system including

a recording head (105) and a playback head (107);

a frequency-dependent compensation circuit (112) having a plurality of R.C.-members for generating a correction current of specified amplitude and phase,

said correction current being applied to said playback head (107) to generate therein a correction voltage which compensates a spurious voltage induced by the stray magnetic field from said recording head (105);

and wherein said compensation circuit includes a non-inverting amplifier (220) with frequency-dependent feedback elements (225–230), the input of said amplifier (220) being connected to two series-connected high-pass filters (215, 216, and 217, 218) and the output of said amplifier (220) being connected to a high impedance resistor (231) for delivering said correction current (I_C).

4,331,993

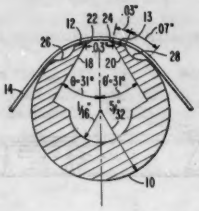
WEB CLEANING APPARATUS

R. Fred Pfost, Los Altos, and Chester W. Newell, San Jose, both of Calif., assignors to Newell Research Corporation, Saratoga, Calif.

Filed Jun. 24, 1980, Ser. No. 162,625

Int. Cl.³ G11B *5/00*; A46B *15/00*

U.S. Cl. 360—137 **3 Claims**



1. An apparatus for cleaning the recording surface of a magnetic tape and guiding the tape as it travels either forward or backward through an arcuate path about the apparatus comprising:

a post body having a peripheral opening therein;

a pair of walls that diverge inwardly of the post body to define opposite sides of the opening;

a pair of arcuate surfaces on the periphery of the post body, one arcuate surface located adjacent one side of the opening and the other arcuate surface located adjacent the other side of the opening, for supporting the tape; and

a pair of knife edges, one edge at one side of the opening and the other edge at the other side of the opening, formed by the intersection of a wall with an adjacent arcuate surface for cleaning the tape in forward and backward directions of tape travel;

said post body being located with the peripheral opening facing the recording surface of the magnetic tape and centered between the arcuate surfaces contacted by the tape;

whereby tape tension forces the tape against the knife edges and the recording surface is scraped regardless of reversal of direction of tape travel.

4,331,994

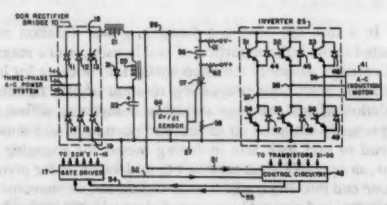
SHOOTTHROUGH FAULT PROTECTION SYSTEM FOR A VOLTAGE SOURCE TRANSISTOR INVERTER

William F. Wirth, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 79,853

Int. Cl.³ H02H *7/122*

U.S. Cl. 361—56 **1 Claim**



1. A shoottthrough fault protection system for a voltage source transistor inverter which is driven by a d-c bus voltage received over a d-c bus, having positive and negative lines, from a d-c voltage source having a filter capacitor shunt-connected across the d-c bus, where the inverter includes, series-

connected across the d-c bus, at least one pair of power bipolar transistors which are subject to undesired shoothrough fault current caused by the discharging of the filter capacitor through the emitter-collector conduction paths of the transistors whenever the transistors are faulted and are inadvertently conductive at the same time thereby short-circuiting the d-c bus, said protection system comprising:

a choke, interposed in series with the filter capacitor between the positive and negative lines of the d-c bus and therefore normally translating only the capacitor ripple current, for limiting the rate of increase of any shoothrough fault current and causing the fault current to increase linearly along a ramp function;

a crowbar circuit shunt-connected across the d-c bus and having a crowbar capacitor and a series-connected SCR;

means for normally changing said crowbar capacitor with a charge of opposite polarity to the charge on the filter capacitor, the positively-charged side of the filter capacitor being adjacent to the positive line of the d-c bus, while the negatively-charged side of the crowbar capacitor is adjacent to the positive line;

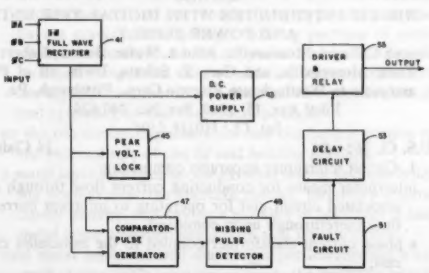
and control means, responsive to a shoothrough fault, for firing said SCR into conduction and discharging said crowbar capacitor to translate high amplitude crowbar current through the faulted transistors in a direction opposite to the fault current from the filter capacitor, the instantaneous amplitude of the crowbar current, at the beginning of a shoothrough fault, being much greater than that of the fault current, thereby producing high amplitude reverse recovery current flow through the faulted transistors which sweeps out the minority carriers and effects fast turn-off of the transistors to prevent the destruction thereof, the crowbar current thereafter decreasing exponentially while the fault current is increasing linearly along a ramp function until the opposing crowbar and fault currents are equal at which time the net transistor current becomes zero, after which the subsequent fault and crowbar currents will both flow through said crowbar circuit in the same direction and will re-charge said crowbar capacitor with the same polarity as the filter capacitor,

the emitter-collector conduction path of each of the transistors being shunted by an oppositely poled feedback diode which conducts the decreasing net transistor current after the minority carriers are swept away and the transistor is turned off.

4,331,995
PHASE UNBALANCE PROTECTOR

Earl Voss, Siloam Springs, Ark., assignor to Diversified Electronics, Inc., Evansville, Ind.

Filed Feb. 2, 1981, Ser. No. 230,449
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—85 **20 Claims**



1. Phase unbalance protection apparatus for a load supplied from a multi-phase electric power line of predetermined frequency comprising

first means for producing and at least temporarily holding a first signal representative of the peak voltage value of the highest voltage phase of said multi-phase electric power line,

second means for generating a second signal representative of the instantaneous maximum of the phase voltage of said multi-phase electric power line,

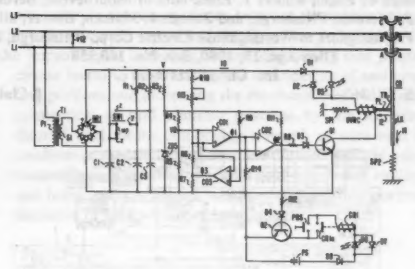
third means for comparing said second signal with said first signal and generating a missing pulse signal when said second signal fails during at least a predetermined fraction of a cycle of said power line frequency to represent a phase maximum voltage at least equal to a predetermined portion of the peak voltage represented by said first signal, and

fourth means responsive to said third means for producing a fault signal upon persistent occurence of said missing pulse signal.

4,331,996
TIME DELAYED UNDERVOLTAGE RELAY

Joseph J. Matsko, Beaver; Raymond O. D. Whitt, and Roy W. Lange, both of Brighton Township, Beaver County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1979, Ser. No. 68,774
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **2 Claims**



1. Circuit breaker apparatus with undervoltage trip capability, comprising:

(a) separable main contact means for protecting an electrical system;

(b) capacitive voltage-sensing means interconnected at the input thereof with said electrical system for measuring the electrical system voltage, said voltage-sensing means having a pair of output terminals across which a voltage signal of predetermined minimum value exists when said electrical system voltage is of a predetermined or greater voltage value, said voltage signal remaining across said terminals for a first predetermined period of time which starts when said electrical system voltage falls below said predetermined value;

(c) resistive means connected in circuit relationship with said pair of output terminals for providing a voltage level between resistive means output terminals, said voltage level being related to the magnitude of said voltage signal;

(d) voltage comparator means having one set of input terminals thereof connected to receive said voltage level, another set of input terminals thereof having a relatively fixed voltage reference value impressed thereacross, the output of said voltage comparator means providing a deenergizing signal when the voltage on said one set of input terminals thereof is less than the voltage on said another set of terminals thereof, said latter event occurring after a second predetermined period of time which is shorter than said first predetermined period of time and which is initiated concurrent with the start of said first period of time;

(e) controllable switch means having a control terminal thereof connected to the output of said voltage compara-

tor means for being deenergized to a non-conducting state at the main terminals thereof whenever such deenergizing signal is present;

(f) undervoltage relay means connected in circuit relationship with said main terminals of said controllable switch means for being controlled thereby, and connected in circuit relationship with said output terminals of said voltage sensing means for being empowered thereby during said second time period, said undervoltage relay means cooperating with said separable main contact means to cause such separable main contact means to open when said undervoltage relay means ceases to conduct, said undervoltage relay means ceasing to conduct when said controllable switch means is made nonconductive thus causing said separable main contacts to open at a time which occurs at the end of said second predetermined time period; and

(g) resettable memory means connected in circuit relationship with said output of said voltage comparator means, said memory means providing a continuing indication of the presence of a prior undervoltage condition until reset.

4,331,997

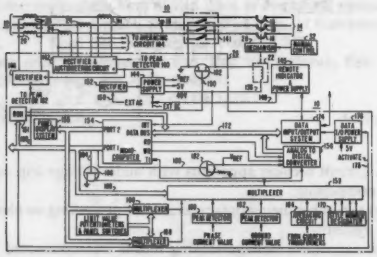
CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND POTENTIOMETERS FOR PARAMETER ENTRY

Joseph C. Engel; Robert T. Elms, both of Monroeville; Bernard J. Mercier, Pittsburgh, and Joseph J. Matsko, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,558

Int. Cl.³ H02H *3/04*

U.S. Cl. 361—93 **8 Claims**



1. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated circuit and for operating to interrupt current flow therethrough on command;

sensing means for sensing current flow through said interrupter means;

trip unit means connected to said sensing means and said interrupter means for comparing current flow through said interrupter means to a predetermined time-current trip characteristic, and for operating said interrupter means to interrupter current flow therethrough whenever said current flow exceeds said predetermined time-current trip characteristic;

entry means for supplying an operator-adjusted variable quantity to said trip unit means; and

display means connected to said trip unit means for displaying a numeric value;

said trip unit means comprising table means for storing a plurality of discrete parameter setting values in a table array, means connected to said entry means for computing an index to said table array from said quantity supplied by said entry means, means for selecting one of said setting values as a parameter of said trip characteristic according to said index, and means for presenting said selected value to said display means to provide a substantially instantaneous feedback to an operator of the numeric value of the parameter setting selected as a result of operator adjustment.

4,331,998

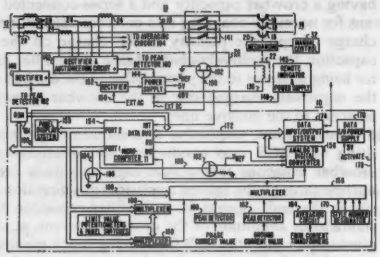
CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND STYLE DESIGNATOR CIRCUIT

Joseph J. Matsko; Emroy W. Lange, both of Beaver; Joseph C. Engel, Monroeville, and Bernard J. Mercier, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,628

Int. Cl.³ H02H *3/04*

U.S. Cl. 361—93 **6 Claims**



1. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated circuit and for operating to interrupt the current flow on command;

sensing means for sensing current flow through said interrupter means;

trip unit means connected between said sensing means and said interrupter means for comparing current flow through said interrupter means to a predetermined time-current trip characteristic and for operating said interrupter means when current flow therethrough exceeds said time-current trip characteristic, said trip unit being operable to execute any of a plurality of optional functions; and

a designator circuit comprising a plurality of selectable electrical connections, each pattern of said connections representing a discrete set of said optional functions;

said trip unit means comprising interpretive means connected to said designator circuit for decoding the pattern of connections selected in said designator circuit and for commanding execution of the discrete set of optional functions represented by said pattern of connections.

4,331,999

CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND POWER SUPPLY

Joseph C. Engel, Monroeville; John A. Wafer, Beaver; Robert T. Elms, Monroeville, and Gary F. Saletta, Irwin, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,626

Int. Cl.³ H02H *3/04*

U.S. Cl. 361—94 **14 Claims**

1. Circuit interrupter apparatus comprising:

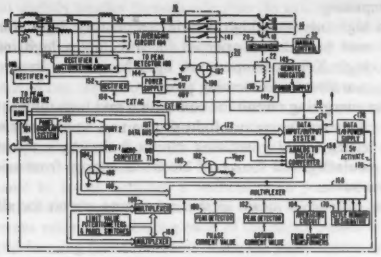
interrupter means for conducting current flow through an associated circuit and for operating to interrupt current flow therethrough upon command;

a phase current transformer coupled to the associated circuit;

trip unit means connected to said phase current transformer for comparing the output of said phase current transformer to a predetermined time-current trip characteristic and for operating said interrupter means whenever said output exceeds limits defined by said time-current trip characteristic;

and

power supply means connected to said phase current transformer and to a source of external power for supplying



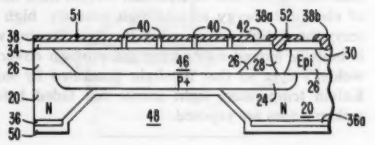
operating power to said trip unit, said power supply means selecting the most appropriate power source as between said phase current transformer and said external power source.

4,332,000

CAPACITIVE PRESSURE TRANSDUCER

Kurt E. Petersen, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,860
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **6 Claims**



1. A capacitive pressure transducer comprising

a unitary semiconductor device structure having a relatively flexible central diaphragm portion of enhanced semiconductor material of one conductivity type material and having contiguous diaphragm holding portions of semiconductor material of the opposite conductivity type arranged on opposite sides of said diaphragm portion and having apertures therein also disposed on opposite sides of and extending to said diaphragm portion,

an electric connecting lead from said diaphragm portion to the external side of one of said holding portions,

a metal layer arranged on the external side of said one holding portion over the aperture therein, forming a hollow cavity thereby, and having a plurality of apertures in said metal layer communicating with said hollow cavity,

said metal layer and said diaphragm portion forming a capacitor of variable capacitance due to the flexibility of said diaphragm portion, and

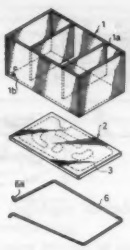
provisions adapting said capacitor for connection into an electric circuit for indicating relative pressure on opposite sides of said diaphragm portion in response to the change of capacitance.

4,332,001

MOUNTING STRUCTURE FOR PRINTED CIRCUIT BOARD

Masaaki Tateishi, Soma, and Shoji Shinbo, Haramachi, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,729
Claims priority, application Japan, Mar. 8, 1979, 54-29680[U]
Int. Cl.³ H05K 1/18
U.S. Cl. 361—399 **5 Claims**



1. In a structure for mounting a printed circuit board formed with a conductive pattern in at least a marginal edge thereof to a frame, wherein abutting portions between the marginal edge of the printed circuit board and the frame are to be soldered;

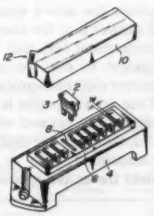
the improvement including means for holding said printed circuit board to said frame prior to soldering of said abutting portions and increasing the mechanical and electrical connection of said abutting portions by the soldering thereof, said means comprising a length of wire bent to conform substantially to the outline of the frame and being located at said abutting portions, said wire being resilient and being easily soldered, whereby said abutting portions inclusive of said wire may be soldered.

4,332,002

FUSE BLOCK COVER

Noboru Yamaguchi, Yokosuka, and Hideaki Wakasugi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 30, 1980, Ser. No. 154,957
Claims priority, application Japan, Jun. 15, 1979, 54-81015[U]
Int. Cl.³ H02B 1/18
U.S. Cl. 361—432 **3 Claims**



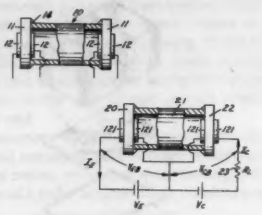
1. In combination: a fuse block body receiving therein fuses of plug-in type each having a flange at its head, and a fuse block cover for protecting the fuses, said fuse block cover being formed with means for engaging the flange of any one of the fuses in the body, said means comprising a groove having a substantially T-shaped cross-section thereby enabling removal from said fuse block of a fuse whose flange has been inserted into said groove and engaged with said means.

4,332,003

ELECTROCHEMICAL ANALOG TRANSISTOR STRUCTURE WITH TWO SPACED SOLID ELECTROCHEMICAL CELLS

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 31, 1980, Ser. No. 117,176
Int. Cl.³ H01G *9/00*; B01J *17/00*; H01G *9/18*
U.S. Cl. 361—433 **11 Claims**



1. An electrochemical structure having a collector region, an emitter region and a base region which are arranged with respect to one another so as to facilitate transistor action and each of said collector emitter and base regions having electrodes in communication with reservoirs of an appropriate active species in electrically neutral form so that said electrochemical structure exhibits electrical characteristics and features commonly known as transistor action and can be used to provide alternating current voltage, current and power gain;

said collector and emitter regions being spaced from one another each including solid ionically conducting material and two affixed electrode layers to form a collector and an emitter solid electrochemical cells respectively, suitable to conduct said appropriate active species available from the reservoirs adjacent to said collector and emitter electrochemical cells;

said base region being an enclosed region which can take up the electrically active species in neutral form;

said emitter and collector electrochemical cells each having one electrode which forms a part of the enclosure of said base region;

the other electrode of each of said emitter and collector electrochemical cells being exposed to the reservoir of the active species in neutral form;

said electrochemical cells being adapted so that transistor action can occur when there is electrochemical withdrawal of the active species from the reservoir adjacent to said emitter electrochemical cell and there is injection of the active species into said base region, while simultaneously the action of said collector electrochemical cell will be to withdraw the active species injected into said base region and deliver it to the reservoir adjacent to said collector electrochemical cell; and

said reservoir adjacent to one electrode of each of said collector and emitter electrochemical cells shall, when the neutral form of the active species is a gas, be a space or a region for containing the gas and when the active species is a liquid or solid, the reservoir shall be a further liquid or solid and be associated with a supporting structure adapted to contain the active species.

4,332,004

LIGHTING SYSTEM FOR USE ON A WELDER HELMET

Grimes G. Slaughter, 240 N. Purdue Ave., Apt. 211, Oak Ridge, Tenn. 37830

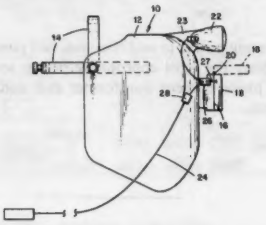
Filed Oct. 2, 1980, Ser. No. 193,365
Int. Cl.³ F21L *15/14*
U.S. Cl. 362—105 **6 Claims**

1. A lighting system for use with a welders helmet of the type having a face shield adapted to cover the face of a person performing a welding task, a viewing port formed in the face shield and a light filtering window covering the viewing port through which the person can view the work piece without exposing his eyes to the welding arc, and pivotal means for moving said light filtering window from the view of the person comprising:

a high intensity, high Kelvin temperature light source on said helmet and oriented for directing a high intensity, high Kelvin temperature light beam to a location forwardly of said viewing port;

an energizing circuit for connecting said high intensity, high Kelvin temperature light source to a source of electrical energy, said energizing circuit including a transformer isolating said source of electrical energy from said light source;

on-off switch means in said energizing circuit for allowing



the flow of electrical current from the source of electrical energy of said high intensity, high Kelvin temperature light source when the light filtering window is covering the welder's eyes;

manually operated switch means in said energizing circuit for selectively overriding the functioning of said on-off switch means; and

and switch means responsive to pivotal movement of said window from the view of the welder for immediately interrupting the flow of electrical current from the source of electrical energy to said high intensity, high Kelvin temperature light source when the light filtering window is initially moved away from the position covering the welder's eyes so that the light generated by said high Kelvin temperature light source has faded before the welder's eyes are exposed.

4,332,005

LIGHTING PANEL FOR DROP CEILINGS

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Filed Mar. 24, 1980, Ser. No. 133,607
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—150 **4 Claims**

1. A drop ceiling lighting apparatus comprising:

a plurality of parallel longitudinal drop ceiling frame members, spaced parallel cross frame members extending be-

tween the longitudinal members to form a grid having square openings, a pair of removable panels positioned in adjacent ones of said openings, each of the removable panels including a square panel frame of the same shape but slightly smaller on each side than the grid opening into which the panel fits, a sheet of translucent material mounted on the panel frame, a pair of support members projecting outwardly of the panel frame from opposite ends of one side of the panel frame for pivotally engaging a pair of adjacent parallel frame members at opposite sides of the square opening, the support members supporting the panel frame from the parallel grid forming frame members along one side of the panel while allowing the panel to rotate between a vertical open position and a horizontal closed position within the grid opening, latch means releasably securing each of the panel frames to the grid forming frame members when the panel frames are in the horizontal closed position, and a light fixture supported directly on the frame members above the panels and spanning both openings, the projected area of the light fixture being substantially different in shape and size than one opening in the ceiling grid.

4,332,006

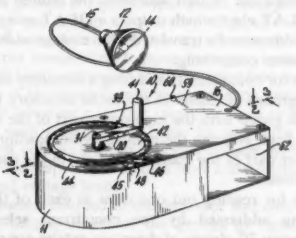
BENCH-TYPE MECHANICAL LIGHT GENERATING DEVICE

Pil Y. Choe, Dunellen, N.J., assignor to Man Bo, Inc., Dunellen, N.J.

Continuation of Ser. No. 949,525, Oct. 10, 1978, abandoned. This application May 27, 1980, Ser. No. 153,456

Int. Cl.³ B62J 5/08

U.S. Cl. 362—193 **4 Claims**



1. A heavy-duty portable mechanical light generating device intended for operation on a supporting surface comprising: a housing being sufficiently large to accommodate heavy-duty internal components and to be generally portable but being inconvenient for hand-held operation so that it is adapted to operate on a supporting surface; an electricity producing generator in said housing including a permanent magnet, a rotatable armature within the magnetic field of said magnet and a rotatable shaft attached to said armature so that rotation of said shaft rotates said armature to thereby produce electricity; a gear train associated with said shaft for driving same, said gear train being driven by a heavy-duty coil spring connected at its outer end to a gear of said train, said coil spring adapted to be wound tight in a substantially circular plane, said spring adapted to slowly unwind thereby turning said gear to which its outside end is connected to drive said gear train for a prolonged period of time without re-winding; mechanical control means for variably controlling the rotative speed of said generator from zero speed to the maximum rotative speed provided by said gear train; and an electrical connector in said housing electrically connected to said generator and adapted to provide a ready attachment for the electrical contacts of a lightbulb.

4,332,007

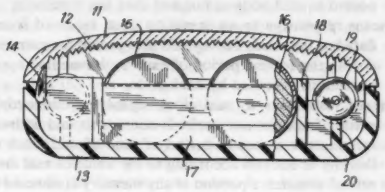
UTILITY LIGHT

Edward Gibstein, and Jeffrey Nortman, both of New York, N.Y., assignors to JEDCO Products Limited, Inc., New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,412

Int. Cl.³ F21L 7/00

U.S. Cl. 362—200 **1 Claim**



1. A flat miniature flashlight intended to be detachably secured to an article, comprising:

(a) an outer plastic casing having an opaque lower compartment and a clear upper compartment cooperating to form said casing, said upper compartment having a serrate inner surface and a pair of angled tabs which detachably engage the lower compartment, said upper compartment having a substantially flat major surface and adjacent side portions;

(b) a power source comprising at least one replaceable battery centrally positioned in said casing;

(c) a light source comprising a pair of replaceable electric bulbs within said casing juxtapositioned on either side of the battery and supported by the lower compartment so as to provide illumination through the clear upper compartment and from the side portions thereof;

(d) electrical means for connecting the power source to the light source;

(e) switch means for actuating the light source; and

(f) VELCRO means affixed to the outer surface of the opaque lower compartment for detachable securing the flashlight to an article.

4,332,008

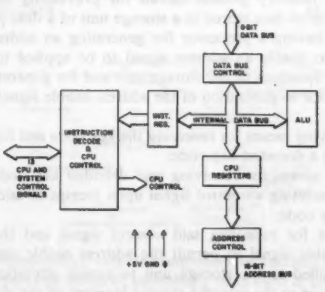
MICROPROCESSOR APPARATUS AND METHOD

Masatoshi Shima, Santa Clara; Federico Faggin, Cupertino, and Ralph K. Ungermann, Los Altos, all of Calif., assignors to Zilog, Inc., Cupertino, Calif.

Division of Ser. No. 665,228, Mar. 9, 1976, abandoned. This application Nov. 9, 1979, Ser. No. 92,827

Int. Cl.³ G06F 9/00, 13/00

U.S. Cl. 364—200 **5 Claims**



CPU BLOCK DIAGRAM

1. A digital central processing unit, on a microcomputer chip comprising:

a program counter,

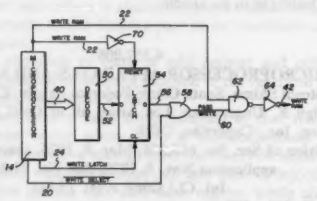
a memory refresh counter,
address bus terminals,
data bus terminals,
means responsive to a clock signal for connecting the value of said program counter to said address bus terminals in a first period of a repetitive machine operation fetch cycle, whereby controlling program operation codes can be obtained at the data bus terminals from a memory connected to said address bus and data bus terminals,
means responsive to an operation code received from said data bus terminals during said first period for carrying out during the second period of each such machine cycle the operations specified by such code,
means responsive to said clock signal for connecting the value of said memory refresh counter to said address bus terminals in a second period of time of said fetch cycle, thereby to address according to the value of said memory refresh counter, a portion of any memory connected to the address bus terminals, said second period of time following immediately said first period, and
means for incrementing each of said program and memory refresh counters before the next succeeding of said machine operation code fetch cycles,
whereby an addressed protion of any memory connected to said address bus terminals is refreshed during the second period of each such machine cycle when the central processing unit otherwise does not use the address but terminals, the refreshing of the entire memory occurring after a plurality of such machine cycles occurs, all without slowing down the processing unit.

4,332,009

MEMORY PROTECTION SYSTEM

I. Steve Gerson, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Jan. 21, 1980, Ser. No. 113,621
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 **6 Claims**



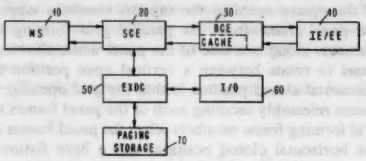
1. A memory protect circuit for preventing inadvertent alteration of data stored in a storage unit of a data processing system having a processor for generating an address enable signal to enable an address signal to be applied to selected storage locations of the storage unit and for generating a key code prior to generation of the address enable signal comprising:
receiving means for receiving the key code and for generating a decoded key code;
latch means for receiving said decoded key code and for generating a control signal upon receipt of said decoded key code;
means for receiving said control signal and the address enable signal to permit the address enable signal to be applied to the storage unit to permit alteration of data stored at the selected storage location of the storage unit through a write operation; and
means for preventing generation of said control signal immediately following a write operation to thereby prevent subsequent write operations until receipt by said receiving means of a subsequently generated key code.

4,332,010

CACHE SYNONYM DETECTION AND HANDLING MECHANISM

Benedicto U. Messina, Poughkeepsie, and William D. Silkman, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,946
Int. Cl.³ G06F *9/36, 13/00*
U.S. Cl. 364—200 **20 Claims**



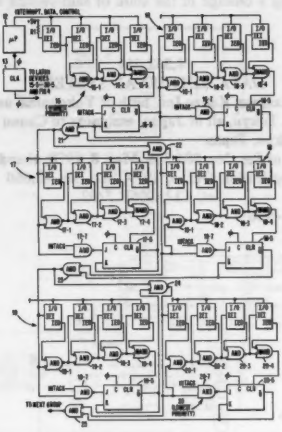
1. In a cache addressing mechanism including a cache, a cache directory having a plurality of congruence classes, each class having one or more entries, each entry capable of containing an address field representing a main storage address corresponding to a subgroup of data in said cache, a request address register for receiving a logical address provided as a request address for a main storage access, the request address including both a translatable field and a non-translatable field; a cache directory address obtained from the request address register including a low-order part of the translatable field and a high-order part of the non-translatable field; a dynamic lookaside address translation buffer (DLAT) for containing logical to main storage address translations of a plurality of recent processor request addresses, the request address selecting a DLAT class which outputs a DLAT entry containing a logical address and a translated main storage address; the cache organization comprising:
means for concurrently selecting a directory class in each of 2^N groups of classes in the cache directory by addressing each group with the high-order part of the non-translatable field, N being the number of bit positions in the low-order part of the translatable field in the cache directory address,
means for reading out one class in each of the 2^N groups being addressed by the concurrent selecting means, wherein 2^N classes of directory entries are read out,
main storage address compare means for comparing each read out directory entry with each main storage address being outputted from the DLAT,
logical address compare means for comparing the request address with each logical address being outputted from the DLAT,
hit detection means receiving the outputs of the main storage compare means and the logical address compare means to provide an any hit signal when the logical address compare means finds the request address is the same as the DLAT outputted logical address and the main storage address compare means finds any outputted directory entry which is the same as the DLAT outputted main storage address,
group control means connected with the hit detection means for providing a group identifier representing the group providing the any hit signal,
cache address generation means connected with the group control means for combining the group identifier and a high-order part of the non-translatable field to address data in a subgroup in the cache,
whereby the addressed data in the cache is data requested by the request address, whether the found directory entry is in a principle class or in a synonym class.

4,332,011

DATA PROCESSING ARRANGEMENT INCLUDING MULTIPLE GROUPS OF I/O DEVICES WITH PRIORITY BETWEEN GROUPS AND WITHIN EACH GROUP

Richard A. Epstein, Tyngsboro, and Henry A. Zannini, North Andover, both of Mass., assignors to Cambridge Telecommunications, Inc., Burlington, Mass.

Filed Mar. 17, 1980, Ser. No. 130,770
Int. Cl.[3] G06F 9/46
U.S. Cl. 364—200 9 Claims



1. A data processing arrangement comprising:

a plurality of groups of input/output means arranged within each group and within the plurality of groups in accordance with a predetermined priority scheme, each of the input/output means of each group having an input and an output and being connected to an interrupt line and a data line, each of the input/output means of each group being capable of initiating a service request and, in response to initiating such a request, to cause its output to change from a first voltage level to a second voltage level and to cause the interrupt line to change from a first voltage level to a second voltage level;

processing means coupled to the interrupt and data lines to the input/output means of the groups of input/output means and operative to detect a change in the voltage level of the interrupt line resulting from an input/output means initiating a service request and, in response to detecting such change, to initiate an interrupt request/acknowledge cycle and to produce control signals establishing a fixed settling time period and a data receiving period;

clock means coupled to the processing means and operative to produce a clock signal;

circuit means coupled to the processing means, to the inputs and outputs of the input/output means of the groups of input/output means and to the clock means and arranged to receive the aforesaid control signals produced by the processing means and the clock signal produced by the clock means, said circuit means being operative in response to said signals to propagate the second voltage level at the output of the input/output means initiating the service request to the inputs of the succeeding input/output means within the same and succeeding groups of input/output means to cause the inputs of said input/output means to be changed from the first voltage levels to the second voltage levels within a time prior to the expiration of the fixed settling time period established by the processing means, said input/output means initiating the service request being operative during the data receiving period established by the processing means to provide data to the processing means via the data line;

said processing means being operative following the receipt of data from the input/output means initiating the service request to produce a reset instruction including first and second coded words for resetting the input/output means initiating the service request;

each of the input/output means being further operative to receive the first coded word of the reset instruction via the data line and, with the exception of the input/output means initiating the service request, to operate in response to the first coded word to change its output from the second voltage level to the first voltage level, and said circuit means being operative to cause the input of the input/output means initiating the service request to be placed at the first voltage level;

said processing means being further operative in the event of a service request initiated by an input/output means in a group of higher priority to disable interrupt operations and to inhibit the production of other control signals at least until the input/output means first initiating the service request has been reset; and

said circuit means being further operative if, after the input of the input/output means which first initiated the service request has been placed at the aforesaid first voltage level by the circuit means, an input/output means in a group of higher priority initiates a service request and causes its output to change from the first voltage level to the second voltage level, and in the absence of control signals produced by the processing means, to prevent said second voltage level at the output of the higher priority input-/output means from being propagated to, and change the voltage levels at, the inputs of the succeeding input/output means including the input/output means of lower priority which first initiated the service request;

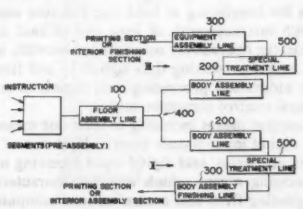
said input/output means which first initiated the service request being thereupon operative to receive the second coded word of the reset instruction from the processing means via the data line and, with its input at the first voltage level and its output at the second voltage level, to operate in response to the second coded word to be placed in a reset state.

4,332,012

CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE COMPONENT ASSEMBLY LINES

Yoshitada Sekine, Ome; Hiroshi Imaizumi, Yokohama; Shoji Katagi, Musashimurayama; Kazunori Obata, Tokyo; Kazuyoshi Abe, Hoya, and Hisashi Shimizu, Akikawa, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 20, 1979, Ser. No. 96,230
Claims priority, application Japan, Nov. 27, 1978, 53-147041
Int. Cl.[3] G06K 7/10; B07C 3/14
U.S. Cl. 364—468 41 Claims



1. In an automotive vehicle component assembling system having at least one series of assembling lines used in common for assembling various model, standards and specifications of the vehicle components,

a system for controlling one of said assembling lines comprising:

a first means for obtaining information and instructions in relation to the vehicle component to be assembled in order

and at a given interval and generating an electric signal representative of the obtained information and instructions of the vehicle component to be assembled;

a second means for receiving said electric signal fed from said first means and converting the electric signal into photoelectrically sensible sign which is printed on a label;

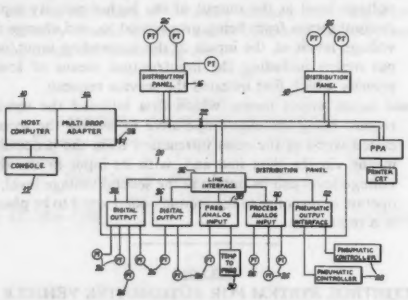
a third means for sticking said label onto a part of said vehicle component and for reading said sign on the label to convert the same to the electric signal fed back to the first means for confirmation, and

a fourth means for reading said sign on the label and obtaining necessary information and instructions and for converting the obtained information and intructions into a control signal for identifying a part of the vehicle component to be picked up and for controlling assembling operations performed in said one assembling line.

4,332,013
CHARACTERIZABLE DISTRIBUTION MEANS IN A SUPERVISORY AND CONTROL SYSTEM

Darrell N. Chelcun, Deerfield; Roderick J. Dougherty, Jr., Oak Park; Kenneth P. Belau, Chicago, and Robert L. Old, Jr., Northbrook, all of Ill., assignors to MCC Powers, Skokie, Ill.

Filed May 12, 1980, Ser. No. 149,292
Int. Cl.³ G06F *15/20*; F28F *27/00*
U.S. Cl. 364—505 **45 Claims**



1. In a system for monitoring and controlling a plurality of control point apparatus which sense environmental, temperature and other parameters and which control equipment which affects the same, the system being of the type which has at least one central control computer means and a pluraity of said control point apparatus, a distribution means for receiving and transmitting data signals from and to said central control computer means and from and to said control point apparatus, said distribution means comprising:

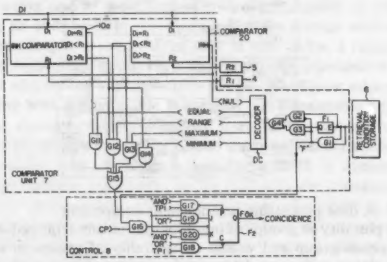
means for interfacing at least one function means, each of which interacts with at least one of said control point apparatus operatively associated therewith, said interfacing means processing data signals to and from said function means and processing data signals to and from said central control computer means;

said function means including at least one means for receiving digital input signals from at least one of said control point apparatus, said digital input receiving means having processing means which receives characterizing signals originating from said central control computer means for characterizing the same to operate in one of first and second modes with respect to each associated control point apparatus, said first mode causing the same to receive signal pulses and retain an accumulated total of said pulses, said processing means also being adapted while in said first mode to receive characterizing commands for defining a predetermined accumulated total for each control point apparatus which represents a significant change of value from said control point apparatus, said processing means also being adapted while in said first mode to receive command signals from said central control computer means to characterize the same to provide an output signal for transmission to said central control computer means when said predetermined total is reached, said second mode causing said processing means to receive signal pulses which are indicative of the change of state of an electrical switch contact associated with said associated control point apparatus and provide an output signal for transmission to said central control computer means indicating a change in the state of said switch contact.

4,332,014
DATA RETRIEVAL SYSTEM

Tamotsu Nakazawa; Kenzo Ina, both of Yokohama, and Takashi Minagawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 884,538, Mar. 8, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,660
Int. Cl.³ G06F *7/02*
U.S. Cl. 364—900 **2 Claims**



1. A data retrieval system comprising:

keyboard means including first keys for designating retrieval conditions under which data is retrieved and for producing retrieval condition signals representative of the retrieval conditions, and second keys for entering keywords, said first keys comprising an EQUAL KEY for causing retrieval to be made of data which is identical with an associated keyword entered, a MINIMUM key for causing retrieval to be made of data which is greater than an associated keyword entered, a MAXIMUM key for causing retrieval to be made of data which is less than an associated keyword entered, and a RANGE key for causing retrieval to be made of data which falls under a range specified by a pair of associated keywords entered;

a retrieval condition memory for storing therein the retrieval condition signals;

first and second keyword memories for storing therein keywords entered, said first keyword memory storing the keywords associated with operation of the EQUAL, MINIMUM and MAXIMUM keys and each of said first and second keyword memories storing the pair of keywords associated with the RANGE key;

a retrieval data memory for storing therein data to be retrieved; and

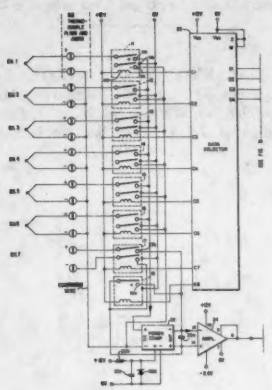
comparator means including first and second comparators responsive to the keywords stored in said first and second keyword memories, respectively, for comparing the data stored in said retrieval data memory with the keywords to produce output signals, a decoder for decoding the retrieval condition signals stored in said retrieval condition memory to produce a decoded signal, and gating means responsive to the output signals and the decoded signal for producing a logical output signal indicative of whether the data to be retrieved satisfies the retrieval conditions.

4,332,015

REMOTE TEMPERATURE-PRESSURE RECORDING SYSTEM

Donald A. Rimdzius, Carol Stream, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,330
Int. Cl.³ G11C *11/40, 13/00*
U.S. Cl. 365—45 48 Claims



1. A remote recording and playback system comprising a recording unit for recording analog data received virtually simultaneously over a plurality of analog input channels, and a playback unit for playing back said recorded analog data for a given one of said plurality of analog input channels;

said recording unit comprising:

counting means for counting through a plurality of count values,

scanner means for sequentially scanning said plurality of analog input channels in succession and comprising a data selector responsive to said count values for issuing corresponding selection signals so as to select a respective analog data sample from each respective one of said plurality of analog input channels, and for providing said selected respective analog data samples as sequential respective analog outputs,

first conversion means for receiving said sequential respective analog outputs, and for converting said sequential respective analog outputs to corresponding digital respresentations thereof, and

memory means for receiving and storing said corresponding digital representations of said sequential respective analog outputs;

said playback unit comprising:

accessing means for accessing said memory means to read out said digital representations of said sequential respective analog output corresponding to said given one of said plurality of analog input channels,

second conversion means for converting said digital representations read out to analog signals, and

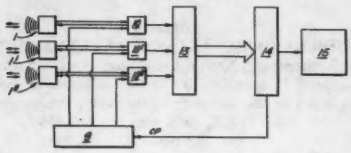
display means responsive to said analog signals for providing a visual display of said recorded analog data for said given one of said plurality of analog input channels.

4,332,016

METHOD, APPARATUS AND TRANSDUCER FOR MEASUREMENT OF DIMENSIONS

Robert G. Berntsen, Asker, Norway, assignor to A/S Tomra Systems, Asker, Norway

Filed Jan. 22, 1980, Ser. No. 114,156
Claims priority, application Norway, Jan. 26, 1979, 790270; Jan. 26, 1979, 790271
Int. Cl.³ G01S *15/89*
U.S. Cl. 367—7 4 Claims



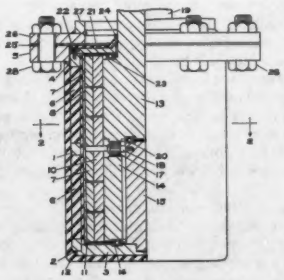
1. A method for dimensional measurement of objects by means of ultrasonic signals, said objects being carried past at least one ultrasonic measurement device consisting of a transmitter/receiver, characterized in that the reflected ultrasonic signals are used to determine the characteristic 3-dimensional dimensions of the objects by converting the delay of the reflected signals into corresponding distances and using the distances to form a 3-dimensional image of the object by means of a computer means and that image being compared with known images for identification, and that said ultrasonic measurement device is arranged such that the beams of ultrasonic signals therefrom are subjected to a reciprocating movement substantially traversing the direction of movement of the objects.

4,332,017

MECHANOACOUSTIC TRANSDUCER FOR USE IN TRANSMITTING HIGH ACOUSTIC POWER DENSITIES INTO GEOLOGICAL FORMATIONS SUCH AS OIL-SATURATED SANDSTONE OR SHALE

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Aug. 20, 1979, Ser. No. 67,727
Int. Cl.³ H04B *11/00*
U.S. Cl. 367—148 15 Claims



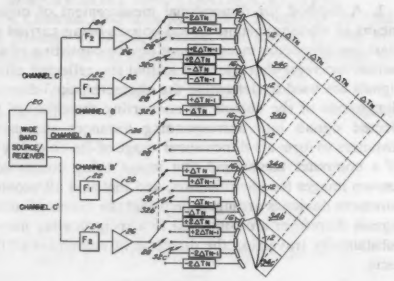
1. In combination in a mechanoacoustic transducer, a plurality of vibratile rigid plate members, each vibratile rigid plate member characterized in that it includes an acoustic energy radiating surface area portion and a mechanically vibratile force-driven portion, compliant structural support means attached to the radiating surface area portions of said vibratile rigid plate members, said structural support means characterized in that the surface area portions of said vibratile rigid plate

members are held in a prescribed array configuration, said compliant structural support means further characterized in that each one of said plurality of mounted vibratile plate members is free to vibrate as a piston when driven by an oscillatory mechanical force, a plurality of oscillatory mechanical force generating cam means, means for coupling each of said plurality of oscillatory mechanical force generating cam means to the force driven portion of each of said plurality of vibratile rigid plate members, whereby each of said plurality of vibratile rigid plate members are simultaneously vibrated synchronously and in phase with one another.

4,332,018
WIDE BAND MOSAIC LENS ANTENNA ARRAY

Robert L. Sternberg, Noank, Conn., and Warren A. Anderson, Tiverton, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1980, Ser. No. 117,426
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—150 **9 Claims**



1. An acoustic transmitter comprising:

wide band electrical means for inhibiting electrical signals of predetermined frequencies and conducting electrical signals of other predetermined frequencies, said wide band electrical means includes a plurality of electrical filters that all pass low frequency signals, some of said electrical filters differ from others in that they have different predetermined high frequency cutoff points;

wide band transducer means for accepting the conducted electrical signals and converting the conducted electrical signals into acoustic signals, said wide band transducer means has transducer subarrays arranged in an array and connected to respective members of said plurality of electrical filters so that the more toward the center of said array each of said transducer subarrays is located the higher the high frequency cutoff point of the electrical filter to which it is connected; and

acoustic means for focusing the acoustic signals and simultaneously forming a plurality of individual near field elementary acoustic beams that form a substantially constant beamwidth frequency independent composite far field acoustic transmitting beam, said acoustic means comprises an array of fully directive indicidual acoustic lens antennas.

6. An acoustic receiver comprising:

acoustic means for receiving acoustic signals and simultaneously focusing a plurality of individual near field elementary acoustic beams that form a substantially constant beamwidth frequency independent composite far field acoustic receiving beam, said acoustic means comprises an array of fully directive indicidual acoustic lens antennas;

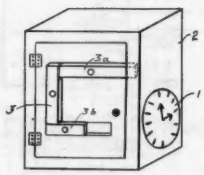
wide band transducer means having transducer subarrays arranged in an array for accepting said plurality of individually focused near field elementary acoustic beams from said acoustic means and converting the acoustic signals in said elementary beams into electrical signals; and

wide band electrical means for conducting electrical signals of predetermined frequencies and inhibiting electrical signals of other predetermined frequencies that together form the electrical analogue of the said substantially constant beamwidth frequency independent composite far field acoustic receiving beam, said wide band electrical means includes a plurality of electrical filters that all pass low frequency signals, some of said electrical filters differ from others in that they have different predetermined high frequency cutoff points, said electrical filters connected to respective members of said transducer subarrays so that the more toward the center of said array each of said transducer subarrays is located the higher the frequency cutoff point of said electrical filter which is connected.

4,332,019
ALARM CLOCK CONTROL

Michael T. Lynches, 34 Exeter St., Pittsburgh, Pa. 15217

Continuation of Ser. No. 819,769, Jul. 28, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,648
Int. Cl.³ G04B *21/00*
U.S. Cl. 368—276 **1 Claim**



1. An alarm clock, a case for closely surrounding said clock except its face and including a door having time delay means requiring a plurality of successive operations consuming appreciable time for delaying the period required for opening said door to turn the alarm to the alarm "off" position, said means comprising a puzzle element requiring concentration by the awakened sleeper for working out the puzzle, said puzzle element comprising three bars of uniform rectangular cross-section throughout their lengths longitudinally slideable in slots on said door and arranged in right angular relationship with one of the bars being slidable horizontally and constituting a locking element for said door by selectively being projected inwardly or outwardly relative to the perimeter of said door in consequence of given operations of said puzzle element, a vertically slidable bar having its bottom end resting against the top end of a second horizontal bar slidable in a horizontal slot of shorter length than its slot by at least the width of said vertically slidable bar.

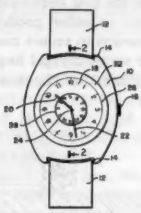
4,332,020
ADHESIVE TIME ZONE ADJUSTER

Arthur B. Leopold, 129 Sandpiper Key, Harmon Cove, Secaucus, N.J. 07094

Filed Jul. 30, 1980, Ser. No. 173,687
Int. Cl.³ G04B *19/22, 19/04*
U.S. Cl. 368—27 **4 Claims**

1. Apparatus for changing the time zone of a timepiece including in combination a face with hour figures spaced around the circumferential area of the face, hands that rotate about the center of the face, a crystal that covers the face beyond the hands and an auxiliary disc that fits over a portion of the area of the crystal and with numerals indicating the hours of the day, said auxiliary disc having adhesive on its rearward surface for securing the face to the crystal of the timepiece with numerals on the auxiliary disc correlated with the hour figures around the circumferential area of the face so as to correspond to a time zone that is different from the hour figures spaced around the circumferential area of the face of

the timepiece, and adhesive on the auxiliary disc on the side that is attached to the crystal of the timepiece; said auxiliary disc consisting of three layers, the first layer being secured to the timepiece and the third layer being secured to the first layer around at least a portion of the periphery of said third and first layers, and the second layer being sandwiched between the third and first layers and of less surface area than the third and



first layers so that no part of the second layer extends between the portions of the first and second layers that contact with one another, and the second layer being rotatable between the first and second layers to change the location of hour figures on the second layer and to change the relative position of the second layer with respect to the hour numbers thereon and with respect to the hour numbers on the face of the timepiece.

4,332,021

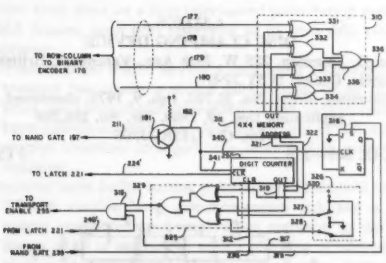
DICTATION SYSTEM INCLUDING DICTATE STATION IDENTIFIER AND CONTROL OF ACCESS TO PARTICULAR RECORDERS

Luther C. Plunkett, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Division of Ser. No. 352, Jan. 2, 1979, Pat. No. 4,254,307. This application Oct. 14, 1980, Ser. No. 196,400

Int. Cl.³ G11B *19/02*

U.S. Cl. 369—29 **3 Claims**



1. In a recording system having a dictate station, a recorder for recording dictation, and operating means operable by said dictate station for the recording of dictation by said recorder; the improvement of

identification means associated with said dictate station for providing a selected sequence of identification signals;

memory means for providing at least one predetermined sequence of identification signals;

inhibiting means responsive to said predetermined sequence of identification signals and said selected sequence of identification signals for rendering said operating means inoperable by said dictate station when said selected sequence of identification signals does not have a predetermined relationship to said predetermined sequence of identification signals,

said inhibiting means comprising a comparator for comparing each individual signal of said selected sequence of identification signals with an individual signal of said predetermined sequence of identification signals and for providing an inhibiting output signal which renders said inhibiting means operative when an individual signal of said selected sequence of identification signals does not have a predetermined relationship to a particular individual signal of said predetermined sequence of identification signals;

latching means responsive to said inhibiting output signal from said comparator for maintaining said inhibiting output signal independently of said comparator; and

reset means associated with said latching means for resetting said latching means upon each occurrence of a predetermined error signal from said dictate station and upon each occurrence of a seizure condition.

4,332,022

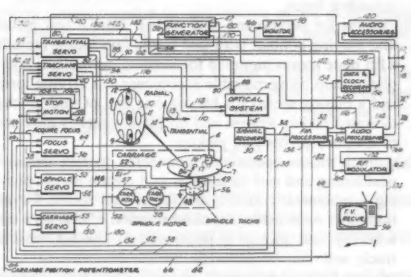
TRACKING SYSTEM AND METHOD FOR VIDEO DISC PLAYER

Ludwig Ceshkovsky, Fountain Valley, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 890,670, Mar. 27, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,904

Int. Cl.³ G11B *21/10*

U.S. Cl. 369—44 **18 Claims**



1. A method of tracking for use in a player for deriving information from spaced information tracks on an information bearing surface, the player including beam steering means having tracking mirror means coupled to tracking error detection means, for following a path formed by any one of the tracks with a source beam of radiation, the method comprising the steps of:

uncoupling the tracking mirror means from the tracking error detection means to establish an open loop mode;

driving the tracking mirror means in the open loop mode to move the source beam from a first one of the tracks towards second one of the tracks;

searching for a selected location of the source beam intermediate the first track and the second track; and

recoupling the mirror means to the tracking error detection means to establish a closed loop mode and control the movement of the mirror means, in response to completing the search for the selected location, as the mirror means approaches the second track, whereby the beam steering means then follows a path formed by the second track with the source beam.

4,332,023

STATIONARY RECORD PLAYER

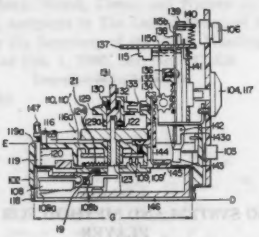
Yasushi Okamura, and Kiichiro Tanaka, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 952,389, Oct. 18, 1978, Pat. No. 4,232,868. This application Apr. 3, 1980, Ser. No. 136,827

Claims priority, application Japan, Oct. 19, 1977, 52-126266; Oct. 19, 1977, 52-126267; Oct. 19, 1977, 52-126268; Feb. 20, 1978, 53-18963; Mar. 6, 1978, 53-25568; Mar. 23, 1978, 53-33864; Mar. 24, 1978, 53-34455

Int. Cl.³ G11B *3/40*

U.S. Cl. 369—177 7 Claims



1. A stationary record player having a turn table rotatively driven by a motor, and a pickup pivotally secured to said turn table so as to trace the track of a stationary record medium whereby a signal is produced in response to the relative motion between said track and pickup further comprising:

(a) switch means for momentarily supplying an energizing current to said electric motor in response to a manual actuating force;

(b) means for positioning said pickup from a rest position into playing contact with said track, said means including a lift plate means mounted for vertical movement, said lift plate means being movable in response to a driving torque, and a biasing means for biasing one end of said pivotally mounted pickup against said lift plate whereby movement of lift plate pivots said pickup;

(c) clutch means operatively connected to said means for positioning and said turn table, said clutch means providing a momentary driving torque to said means for positioning in response to an initial rotation of said turn table; whereby said pickup is positioned in contact with said track; and

(d) means for energizing said motor continuously when said pickup is placed in playing contact with said track.

4,332,024

PHONOGRAPH TONE ARM WITH COUNTERWEIGHT AND METHOD OF USE

Anthony Orchard, Huntington Station, N.Y., assignor to Avnet, Inc., New York, N.Y.

Filed May 7, 1980, Ser. No. 147,531

Int. Cl.³ G11B *13/10*

U.S. Cl. 369—254 16 Claims

1. An improved phonograph tone arm with a counterweight assembly for use with the phonograph tone arm, the tone arm comprising a tube hollow at the rearward end and characterized by a longitudinal slot at the hollow, rearward end, and having a stylus at the forward end thereof adapted to track upon a record for playing purposes, the tone arm adapted in use to be pivoted intermediate the forward and the rearward ends and having the counterweight assembly on the rearward end of the tone arm, to provide a calibrated, adjustable stylus tracking force, the improved counterweight assembly comprising:

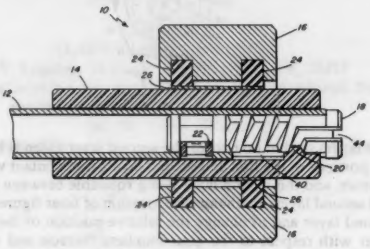
(a) a first counterweight sleeve element movably mounted on the rearward end of the tone arm and adapted for forward or rearward movement on the tone arm;

(b) a second counterweight element slidably mounted for forward or rearward movement on the first sleeve element;

(c) marking means on said first counterweight sleeve element, to indicate the relative positions of the first and second counterweight elements; and

(d) means to secure the first sleeve element to the tone arm in a desired zero or other predetermined stylus-force position, which means to secure comprises

(i) a worm drive screw carried longitudinally within the rearward, hollow end of the tone arm,



(ii) means to engage the worm drive screw extending through the longitudinal slot and into movable engagement with the worm drive screw, and

(iii) means to rotate the worm drive screw, whereby the first sleeve element, with the second sleeve element mounted thereon, may be moved longitudinally between forward and rearward positions on the tone arm, whereby the second counterweight may be positioned at a predetermined point shown by the marking means, to provide for the adjustment of the desired stylus force which is displayed by the marking means.

4,332,025

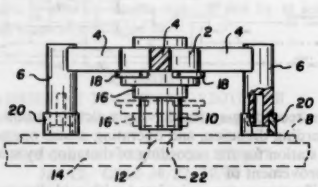
DISC CLAMPING DEVICE

Brian D. Thurston, 285 W. 39th Ave., Vancouver, British Columbia, Canada (V5Y 2P4)

Continuation of Ser. No. 10,782, Feb. 9, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,304

Int. Cl.³ G11B *23/00*

U.S. Cl. 369—270 3 Claims



1. A device to secure a record having a central hole, a central area surrounding the hole and a grooved play area, to a turntable of a record player, the turntable having attached to it a smooth spindle, free of identations, and extending upwardly from said turntable to be able to engage the hole in the record and to extend through said hole, the device comprising:

a central boss;

arms extending outwardly from the boss;

a leg at the end of each arm extending downwardly when the device is in its useful position to apply pressure to the central area of the record, remoted from the spindle,

adjacent the perimeter of the central area to hold the record securely in contact with the turntable during play;

a split tube extending downwardly from the boss when the device is in its useful position to fit over an upstanding spindle on the turntable; and

a collar on the exterior of the split tube to compress the split tube onto the spindle when the collar is moved down the tube, away from the boss, at any height on the spindle, depending on the thickness of the record.

4,332,026

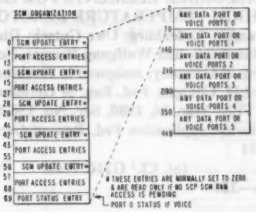
MULTIPLE DATA RATE DIGITAL SWITCH FOR A TDMA COMMUNICATIONS CONTROLLER

Joseph A. Alvarez, III, Damascus; John F. Brennen, Gaithersburg, and Robert W. Krug, Rockville, all of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,322

Int. Cl.³ H04J *3/16;* H04Q *11/04*

U.S. Cl. 370—66 **10 Claims**


SCM ORGANIZATION
SCM UPDATE ENTRY
PORT ACCESS ENTRIES
PORT STATUS ENTRY
ANY DATA PORT OR VOICE PORTS 0
ANY DATA PORT OR VOICE PORTS 1
ANY DATA PORT OR VOICE PORTS 2
ANY DATA PORT OR VOICE PORTS 3
ANY DATA PORT OR VOICE PORTS 4
ANY DATA PORT OR VOICE PORTS 5
THESE ENTRIES ARE NORMALLY SET TO ZERO & ARE READ ONLY IF NO SCP SCM RAM ACCESS IS PENDING
PORT 0 STATUS IF VOICE

1. A multiple data rate digital switch for a TDMA communications controller having a plurality of input/output ports for transferring n_i channels of m data units each per TDMA frame from respective, local data users to a TDMA transmit burst communication link and transferring n_i of said channels of data from a TDMA receive burst communication link to said respective local users on a time interleaved basis during periodic TDMA frames, each port operating at its own data rate R_i, comprising:

a transmit burst buffer having a data input connected to a transmit bus common to the data outputs of all of said ports and a data output connected to said TDMA transmit burst communication link, with a plurality of addressable storage locations arranged into rows and m juxtaposed columns;

a receive burst buffer having a data input connected to said TDMA receive burst communication link and a data output connected to a receive bus common to the data inputs of all of said ports, with a plurality of addressable storage locations arranged into rows and m juxtaposed columns;

a scanner having a periodic cycle of m scans per TDMA frame, there being a frame rate of f frames per second, with a scan count output connected as a column address input to said transmit burst buffer and to said receive burst buffer;

a switch control memory, having an address input connected to a scan output of said scanner, a port select output connected to a control input to each of said ports and a stored address output connected to a row address input to said transmit burst buffer and to said receive burst buffer, for storing n_i control words for each of said ports, each of n_i controls words for the i-th port and issuing a port select signal to said i-th port and issuing a distinct row address to said transmit burst buffer and said receive burst buffer when scanned by said scanner, where $n_i = R_i/mf$;

whereby ports having a variety of data rates can be serviced on a time interleaved basis.

4,332,027

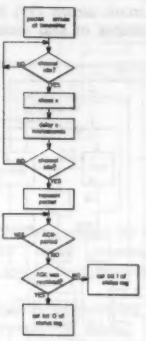
LOCAL AREA CONTENTION NETWORK DATA COMMUNICATION SYSTEM

Michael A. Malcolm, Del Mar, Calif.; Mark L. C. Gerhold, West Chester, Pa.; Gary W. Hodgman, West Bloomfield, Mich.; Marshall M. Parker, San Diego, Calif.; Lawrence D. Rogers, Del Mar, Calif., and John E. Spracklen, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 1, 1980, Ser. No. 145,606

Int. Cl.³ H04J *6/00*

U.S. Cl. 370—94 **12 Claims**



7. A station in a data communication network having a plurality of such stations coupled to a communication channel, said station comprising:

sensing means coupled to said channel to detect when said channel is inactive;

clock means coupled to said sensing means to determine a random period of time after sensing means detects no activity on said channel; and

transmitting means coupled to said channel and said clock means to transmit an information packet on said channel after said random period of time and when there is no activity on said channel.

4,332,028

METHOD OF MEASURING THE MEMORY ADDRESS ACCESS TIME (AAT) UTILIZING A DATA RECIRCULATION TECHNIQUE, AND A TESTER FOR ACCOMPLISHING SAME

Jacky H. Joccotton, Saint Germain Les Corbeil, and Bernard Vanoudheusden, Ballancourt, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,716

Claims priority, application France, Jun. 29, 1979, 79 17303

Int. Cl.³ G06F *11/22;* G01R *15/12*

U.S. Cl. 371—21 **1 Claim**

1. A tester (FIG. 9) for the automatic measurement of the Address Access Time (AAT) of a read/write memory (20), said memory having a plurality of data in lines (d.i.), a plurality of data out lines (d.o.), a plurality of address lines (ad) and read/write control means (21), said tester including:

first multiplexer circuit means (94) having an output connected to said data in lines (d.i.) of said memory (20), said first multiplexer circuit means having first and second inputs;

program matrix circuit means (95) having an output connected to said first input of said first multiplexer circuit means (94), said program matrix means storing data to be written into said memory (20);

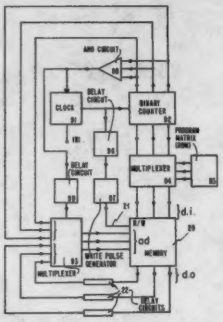
second multiplexer circuit means (93) having an output connected to said plurality of address lines (ad) of said memory (20), said second multiplexer circuit means having first, second and third inputs;

first delay circuit means (22) connecting said plurality of data out lines (d.o.) of said memory (20) to said first input of said second multiplexer circuit means (93);

logical circuit means (98) having an input and an output, said logical circuit means consisting essentially of AND circuit means;

binary counter circuit means (92) having an input and an output, said output of said binary counter circuit means being connected in common to said second input of said first multiplexer circuit means (94), said input of said logical circuit means (98) and said second input of said second multiplexer circuit means (93);

second delay circuit means (99) having an input and an output, said output of said second delay circuit means



being connected to said third input of said second multiplexer circuit means (93), said input of said second delay circuit means (99) being connected to said output of said logical circuit means (98);

third delay circuit means (96) having an input and an output;

clock circuit means (91) having an input and an output, said input of said clock circuit means being connected to said output of said logical circuit means and said output of said clock circuit means being connected in common to said input of said binary counter circuit means (92) and said input of said third delay circuit means (96);

and, pulse generator circuit means (97) having an input connected to the output of said third delay circuit means (96) and an output connected to said read/write control means (21) of said memory (20).

4,332,029

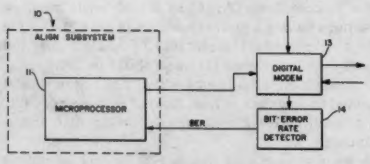
AUTOMATIC ALIGNMENT SYSTEM FOR A DIGITAL MODEM

David K. Campbell, and Luther L. Crabtree, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 16, 1980, Ser. No. 150,294

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—22 **20 Claims**



8. For use with a data communications device having a plurality of alignment points at each of which a respective control signal is applied for controlling the operation of said device, said device including means for providing a measurement of the performance thereof in response to the application of said respective control signals at said alignment points, a method of optimizing said measured performance comprising, for each of said alignment points, the steps of:

(a) adjusting said control signal until, for such adjustment, there is no substantial improvement in measured device performance;

(b) establishing a prescribed range of control signal adjustment about the value of said control signal for which there was no substantial improvement in the measured device performance in step (a);

(c) adjusting said control signal over said prescribed range and measuring the performance of said device for each value of said control signal;

(d) comparing the optimum device performance measured in step (c) with the optimum performance obtained in step (a); and

(e) establishing the value of said control signal at that value which produced the optimum one of the measured device performances compared in step (d).

4,332,030

PAIRED ABSORBER ELEMENTS FOR GAS COOLED HIGH TEMPERATURE REACTORS

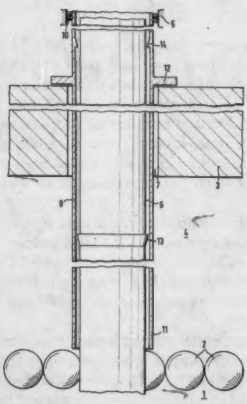
Siegfried Brandes, Ladenburg; Uwe Gutsch; Dietrich Leithner, both of Mannheim, and Wolfgang Presser, Schwetzingen, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,156

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916651

Int. Cl.³ G21C *7/08*

U.S. Cl. 376—226 **7 Claims**



1. A gas cooled high temperature reactor comprising:

a core having a bed of single passage, spherical fuel elements;

a reflector surrounding the bed on all sides;

means for circulation of cooling gas through said core from top to bottom;

a plurality of control and shut-down absorber elements, said elements comprising a first group of absorber elements, in the shape of rods and directly insertable into the bed, a second group of absorber elements with a lesser capacity for the absorption of thermal neutrons than that of the first group of absorber elements, said second group of absorber elements having a tubular configuration and being movable between an upper and a lower terminal position, each of said second group of absorber elements surrounding one of said first group of absorber elements and capable of displacement in the same direction as the surrounded absorber element with a lower terminal position determined as the position wherein the lower end of said ele-

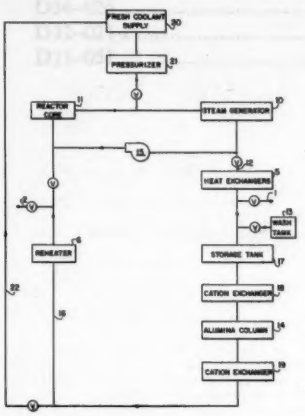
ment contacts the surface of the bed of spherical fuel elements.

4,332,031

SILICA REMOVAL PROCESS AND ALUMINA COMPOSITION USED THEREIN

Aaron Barkatt, Hyattsville, Md., and Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034, assignors to Pedro B. Macedo, Bethesda and Theodore A. Litowitz, Silver Spring, both of, Md.

Filed Mar. 21, 1980, Ser. No. 132,588
Int. Cl.³ G21C *19/32*; B01J *21/02*
U.S. Cl. 376—313 16 Claims



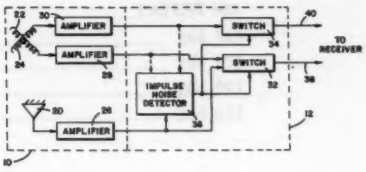
11. In a nuclear reactor coolant system employing an aqueous coolant which contains borate to control the neutron flux and silica as an impurity and wherein the coolant in said system is purified and then recycled, the aqueous coolant containing at least about 100 times as much borate as silica, the improvement which comprises contacting said coolant with borate-containing alumina to selectively remove silica while leaving the borate concentration of said solution substantially unchanged.

4,332,032

ADAPTIVE HYBRID ANTENNA SYSTEM

Donald B. Daniel, Northridge, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 24, 1979, Ser. No. 42,198
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—277 12 Claims



1. An airplane hybrid antenna system for receiving an electromagnetic information signal transmitted within a VLF/Omega navigation system, said antenna system comprising:

electric field antenna means for receiving the electric component of said electromagnetic signal;

magnetic field antenna means for receiving the magnetic component of said electromagnetic signal;

means for detecting and monitoring the impulse noise in said electric component of said electromagnetic signal received by said electric field antenna means, said detecting and monitoring means being operative to produce an output signal when the amplitude of the detected impulse noise reaches a predetermined level;

means for transmitting the signals received by said electric field and magnetic field antenna means to a receiver; and

switch means adapted for normally connecting said electric field antenna means to said transmitting means, said switch means being operative in response to said output signal from said detecting and monitoring means to connect said magnetic field antenna means to said transmitting means.

DESIGN PATENTS

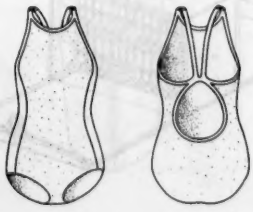
GRANTED MAY 25, 1982

ERRATA

For CLASS	See PATENT NO.
D32–049	264,543
D34–026	264,572
D32–021	264,591
D21–051	264,631

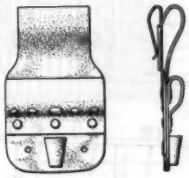
264,515
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Jun. 5, 1980, Ser. No. 156,891
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

264,516
BATHING SUIT
Michel Joseph, Saverne, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France
Filed Jul. 24, 1978, Ser. No. 927,737
Claims priority, application France, Jan. 24, 1978, 78 337
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—40

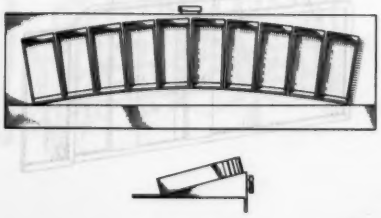


264,517
REVERSIBLE BASEBALL GLOVE
Israel Zidele, 1303 Ditmas Ave., Brooklyn, N.Y. 11226
Filed Oct. 12, 1979, Ser. No. 84,633
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361

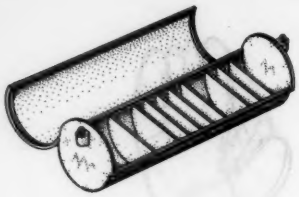
264,518
GOLFER'S ACCESSORY CARRIER OR SIMILAR ARTICLE
Abram Schneider, 3063 Cambridge-D, Deerfield Beach, Fla. 33441
Filed Sep. 21, 1979, Ser. No. 77,633
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



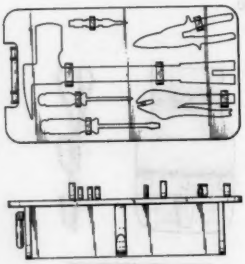
264,519
COMBINED CANVAS MESH HOLDER AND YARN STRAND RECEPTACLES
Fred R. Birtell, 7271 Lassen View Dr., Palo Cedro, Calif. 96073
Filed Jan. 28, 1980, Ser. No. 116,282
Term of patent 14 years
Int. Cl. D5—*99*
U.S. Cl. D3—23



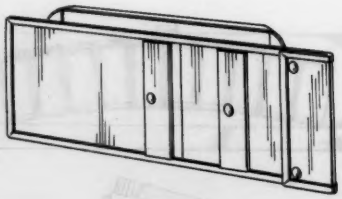
264,520
COMBINED CONTAINER AND DISPENSER FOR ROLLS OF STRIPS OF LABELS OR THE LIKE
William E. Garrett, Charleston, W. Va., assignor to Progressive Technology, Inc., Lebanon, Ohio
Filed Mar. 24, 1980, Ser. No. 132,900
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



264,521
COMBINED HOLDER AND CARRIER FOR EMERGENCY RESCUE APPARATUS
Thomas C. Parr, 6106 Bausch Rd., Galloway, Ohio 43119
Filed Nov. 13, 1979, Ser. No. 93,271
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1

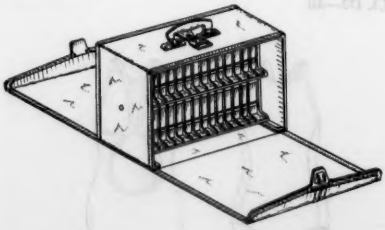


264,522
DRUM STICK HOLDER
William E. Welborn, 4601 E. 135th St., Grandview, Mo. 64030
Filed Apr. 22, 1980, Ser. No. 142,850
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



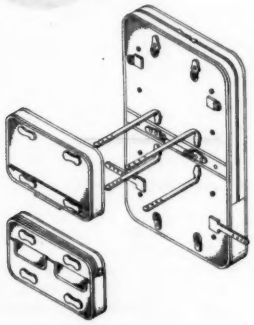
264,523
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Jan. 12, 1981, Ser. No. 224,329
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48

264,524
CARRYING CASE FOR TAPE CASSETTES
Richard Merzon, c/o Merzon Leather Co., Inc., 85 N. Third St., Brooklyn, N.Y. 11211
Filed May 22, 1980, Ser. No. 152,566
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

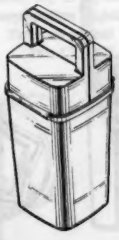


264,525
ARTICLE SUPPORT CONSOLE FOR AUTOMOBILES
Cornelius D. Page, Jr., Gastonia, N.C., assignor to Allied Plastics, Inc., Gastonia, N.C.
Filed May 16, 1980, Ser. No. 150,312
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—40

264,526
GARMENT CARRIER
Theodore Haft, 3844 Carrel Blvd., Oceanside, N.Y. 11572
Filed Apr. 2, 1979, Ser. No. 26,085
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



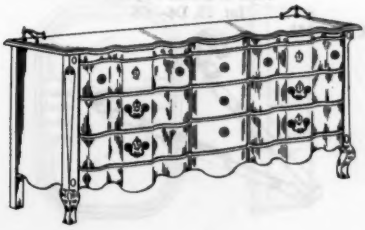
264,527
STORAGE CASE OR THE LIKE
Masao Kato, Okazaki, Japan, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 19, 1980, Ser. No. 122,555
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



264,528
BABY SEAT
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1979, Ser. No. 72,521
Claims priority, application Japan, Mar. 19, 1979, 54-10908
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9

264,529
CHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11560
Filed Oct. 18, 1979, Ser. No. 86,080
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

264,530
DRESSER OR THE LIKE
Harold V. Aulbert, High Point, and Charles M. Horton, Troutman, both of N.C., assignors to Burlington Furniture Div. of Burlington Industries, Inc., Greensboro, N.C.
Filed Feb. 12, 1979, Ser. No. 11,305
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

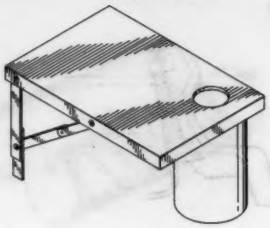


264,531

PORTABLE FISH FILLETING TABLE

Varley P. Trode, 170 N. Harmon Dr., Mitchell, S. Dak. 57301

Filed Feb. 12, 1980, Ser. No. 120,940
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

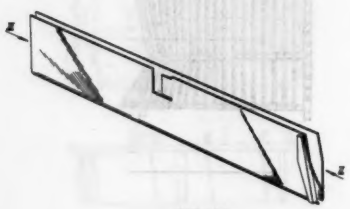


264,532

FURNITURE SUPPORT BRACKET

Kenneth B. Fether; Maurice Grosse, and Michael Carson, all of London, England, assignors to Planned Space Products Limited, England

Filed Aug. 16, 1979, Ser. No. 67,038
Claims priority, application United Kingdom, Jan. 11, 1979, 79988057
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



264,533

BELT HANGER

Edward A. Jensen, Box 99, Salem, S. Dak. 57058

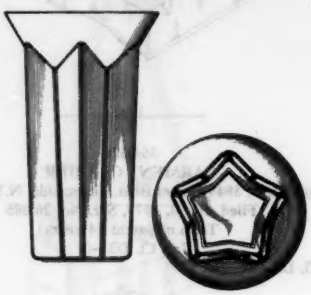
Filed Apr. 28, 1980, Ser. No. 144,254
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—255

264,534

DRINKING GLASS

Jerrilyn Kiyokane, Long Beach, Calif., assignor to Namkung Promotions, Inc., Garden Grove, Calif.

Filed Jun. 23, 1980, Ser. No. 162,077
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6

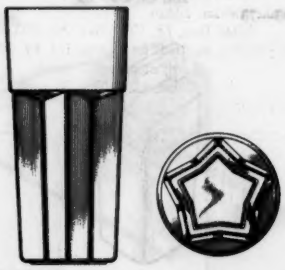


264,535

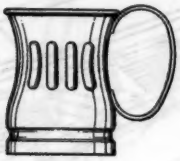
DRINKING GLASS

Jerrilyn Kiyokane, Long Beach, Calif., assignor to Namkung Promotions, Inc., Garden Grove, Calif.

Filed Jun. 23, 1980, Ser. No. 162,078
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6

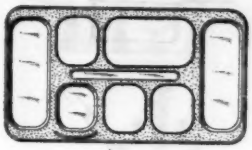


264,536
MUG
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,298
Claims priority, application Japan, Jul. 18, 1979, 54030152
Term of patent 7 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

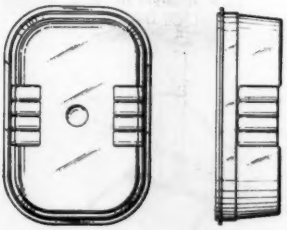


264,537
MUG
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,300
Claims priority, application Japan, Jul. 18, 1979, 54-030154
Term of patent 7 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

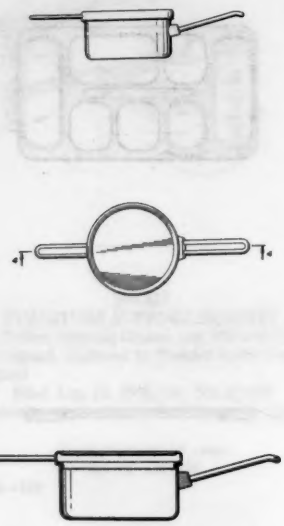
264,538
FOOD TRAY
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Oct. 13, 1977, Ser. No. 841,692
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38



264,539
COVER FOR FOOD DISH
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Oct. 13, 1977, Ser. No. 841,691
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40

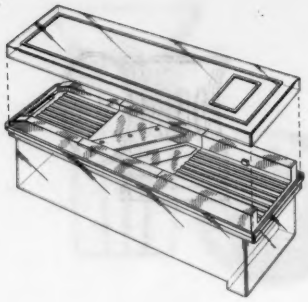


264,540
COVERED SAUCEPAN OR SIMILAR ARTICLE
Toshio Otake, Yoshida, Japan, assignor to Yoshikawa Metal Ware Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,297
Claims priority, application Japan, Jul. 10, 1979, 54-029010
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—95



264,541
GRILL
Aivars Bruveris, Flintgatan 15, S-330 30 Gnosjo, Sweden
Filed Nov. 6, 1979, Ser. No. 91,708
Claims priority, application Sweden, May 23, 1979, 79-1312
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—109

264,542
KITCHEN SLICER
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Oct. 10, 1978, Ser. No. 949,532
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



264,543
BARBEQUE GRILL CLEANER
Roscoe W. Ashley, 509 E. Old Shakopee Rd., Apt. 203, Bloomington, Minn. 55420
Filed Jul. 9, 1979, Ser. No. 56,007
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—49

264,544
PRUNER

Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England

Filed Jun. 7, 1979, Ser. No. 46,249
Claims priority, application United Kingdom, Dec. 20, 1978, 987766/78
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

264,545
PRUNER

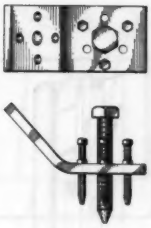
Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, Buckinghamshire, England

Filed Jul. 13, 1979, Ser. No. 57,188
Claims priority, application United Kingdom, Feb. 6, 1979, 79 988 437
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

264,546
FLYWHEEL PULLING TOOL

Joseph F. Grego, Jr., 709 Ogletown Rd., Newark, Del. 19711

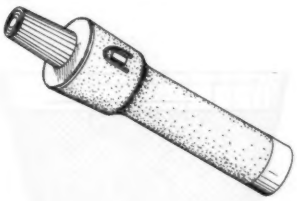
Filed Mar. 26, 1980, Ser. No. 134,291
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



264,547
ELECTRIC FISH HOOK SHARPENER

William R. Watson, 639 Oak La., Marion, Va. 24354

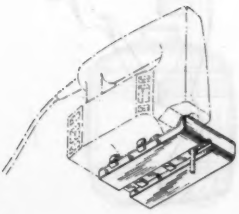
Filed Jul. 25, 1979, Ser. No. 60,816
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



264,548
TOOL ATTACHMENT

Peter Krosunger, 19 Clinton St., Port Jefferson Station, N.Y. 11776

Filed Mar. 28, 1980, Ser. No. 135,075
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—70



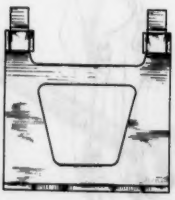
264,549
HANDLE
Joseph P. Tuzzi, Galesburg, Ill., assignor to Magic Chef, Inc., Cleveland, Tenn.
Filed Aug. 7, 1978, Ser. No. 931,359
Term of patent 14 years
Int. Cl. D8—06
U.S. Cl. D8—317

264,550
OUTSIDE CORNER BRACKET
Gilbert J. Wanzor, 7573 Skyview Dr., Kent, Ohio 44240
Filed Jun. 11, 1979, Ser. No. 47,089
Term of patent 14 years
Int. Cl. D8—08
U.S. Cl. D8—381

264,551
INSIDE CORNER BRACKET
Gilbert J. Wanzor, 7573 Skyview Dr., Kent, Ohio 44240
Filed Jun. 11, 1979, Ser. No. 47,090
Term of patent 14 years
Int. Cl. D8—08
U.S. Cl. D8—381

264,552
FASTENER
John O. Bogren, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 26, 1979, Ser. No. 107,303
Term of patent 14 years
Int. Cl. D8—08
U.S. Cl. D8—387

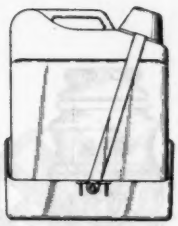
264,553
SUPPORT BRACKET FOR A FILTER OR THE LIKE
Brad T. Wight, 3400 S. Ridge East, and Larry S. Fargo, 4315 Beck Rd., both of Ashtabula, Ohio 44004
Filed Mar. 3, 1980, Ser. No. 126,571
Term of patent 14 years
Int. Cl. D08—08
U.S. Cl. D8—396



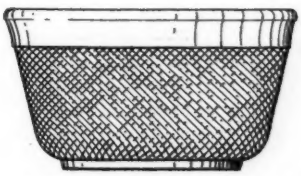
264,554
SUPPORT BRACKET FOR A FILTER OR THE LIKE
Brad T. Wight, 3400 S. Ridge East, and Larry S. Fargo, 4315 Beck Rd., both of Ashtabula, Ohio 44004
Filed Mar. 3, 1980, Ser. No. 126,572
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—396

264,555
CONTAINER FOR SOLUBLE PASTES
Paul K. Rand, 14, The Ridgeway, Hitchin, Hertfordshire, England
Filed Sep. 28, 1979, Ser. No. 79,749
Claims priority, application United Kingdom, Mar. 31, 1979, 9989307
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337

264,556
COMBINED CONTAINER FOR LIQUIDS AND HOLDER THEREFOR
Borge Hestehave, and Kjeld Hestehave, both of 1841 E. Acacia St., Ontario, Calif. 91761
Filed Apr. 10, 1980, Ser. No. 138,971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337



264,557
PACKAGING CONTAINER
Van D. Groenewold; Hubert E. Christian, and James P. Schwartz, all of Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Oct. 5, 1979, Ser. No. 82,381
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—349



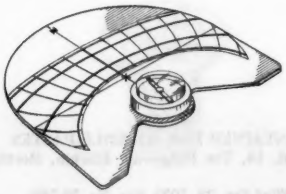
264,558
CONTAINER FOR LIQUIDS UNDER PRESSURE
Kenichi Maeda, Neyagawa, Japan, assignor to the Nippon Aluminium Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 18, 1979, Ser. No. 104,984
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

264,559
JAR OR SIMILAR ARTICLE
Floyd E. Pettengill, and David M. O'Toole, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Filed Aug. 22, 1980, Ser. No. 180,512
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—385

264,560
BOTTLE
J. Jay Anderson, Racine; Karl J. Bobinger, Union Grove, and Ronald G. Cramer, Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Continuation-in-part of Ser. No. 887,408, Mar. 17, 1978. This application Oct. 15, 1979, Ser. No. 85,073
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

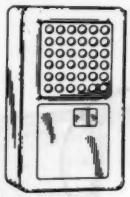
264,561
WRISTWATCH
Kazunari Sasaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jun. 14, 1979, Ser. No. 48,564
Claims priority, application Japan, Dec. 14, 1978, 53-53394
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

264,562
DEVICE TO INDICATE THE POSITION OF THE SUN AT DIFFERENT TIMES
John S. Lapsley, 2d/30 Milson Rd., Cremorne Point, New South Wales 2090, Australia
Filed Nov. 7, 1979, Ser. No. 92,252
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



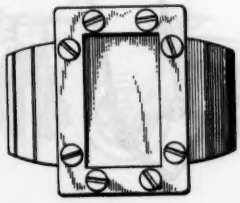
264,563
VEHICLE BATTERY CONDITION INDICATOR
Chung S. Leung, Kowloon, Hong Kong, assignor to Foster Industries Co., Ltd., Kowloon, Hong Kong
Filed Apr. 29, 1980, Ser. No. 144,934
Claims priority, application United Kingdom, Mar. 19, 1980, 994117
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75

264,564
WINDOW ALARM
Michael G. Jaretsky, Sparta, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.
Filed Aug. 13, 1979, Ser. No. 66,105
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

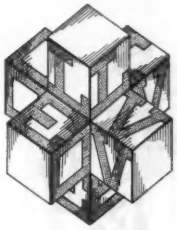


264,565
VEHICLE SAFETY SIGNAL
John V. Medeiros, 89 Norwood St., Swansea, Mass. 02777
Filed Oct. 9, 1979, Ser. No. 82,971
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

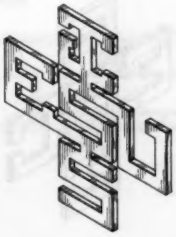
264,566
FINGER RING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Jun. 9, 1980, Ser. No. 157,415
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—30



264,567
PENDANT
Umberto Vandoni, Via Bolivia, 38 Palazzolo Milanese di Paderno, Dugnano (Milano), Italy
Filed Jul. 27, 1979, Ser. No. 61,445
Claims priority, application Italy, Jan. 30, 1979, 61904 B/79
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

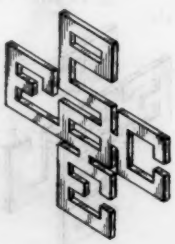


264,568
PENDANT
Umberto Vandoni, Via Bolivia, 38 Palazzolo Milanese di Paderno, Dugnano (Milano), Italy
Filed Jul. 27, 1979, Ser. No. 61,446
Claims priority, application Italy, Jan. 30, 1979, 61903 B/79
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61



264,569
PENDANT
Umberto Vandoni, Via Bolivia, 38 Palazzolo Milanese di Paderno, Dugnano (Milano), Italy
Filed Jul. 27, 1979, Ser. No. 61,447
Claims priority, application Italy, Jan. 30, 1979, 61983 B/79
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

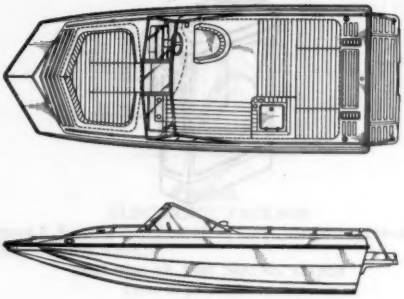
264,570
PENDANT
Umberto Vandoni, Via Bolivia, 38 Palazzolo Milanese di Paderno, Dugnano, Milan, Italy
Filed Jul. 27, 1979, Ser. No. 61,448
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61



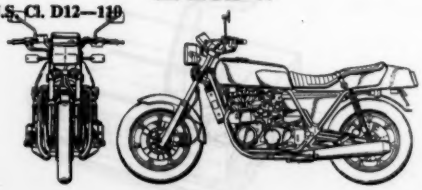
264,571
PENNANT
Larry Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,049
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

264,572
CART FOR LOGS
Richard E. Lowry, 2919 Industrial Park Dr., Finkberg, Md. 21048
Filed Feb. 25, 1980, Ser. No. 124,595
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26

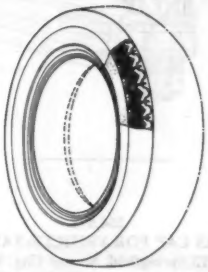
264,573
COMBINED BOAT HULL AND TOP THEREOF
Roy A. Rogers, Fort Worth, Tex., assignor to Vivian Industrial Plastics, Inc., Fort Worth, Tex.
Filed Nov. 21, 1978, Ser. No. 962,666
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—310



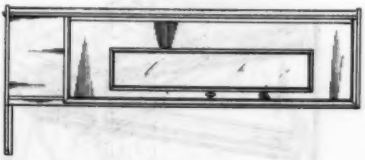
264,574
MOTORCYCLE
Tadahiro Kurishima, and Tomonori Mogi, both of Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Mar. 13, 1979, Ser. No. 20,065
Claims priority, application Japan, Sep. 20, 1978, 53-39639
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—119



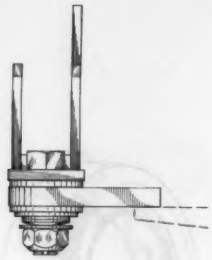
264,575
TIRE SIDEWALL
Christopher J. Aston, Birmingham, and Claude A. Hart, Sutton Coldfield, both of England, assignors to Dunlop Limited, West Midlands, England
Filed May 8, 1979, Ser. No. 37,302
Claims priority, application United Kingdom, Nov. 11, 1978, 987253/78
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—152



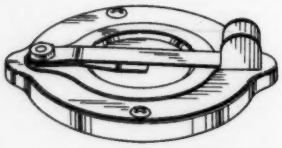
264,576
PICKUP TRUCK BED ENCLOSURE
Thomas L. Godwin, 940 N. Tibbs Ave., Indianapolis, Ind. 46222
Filed Nov. 5, 1979, Ser. No. 90,909
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



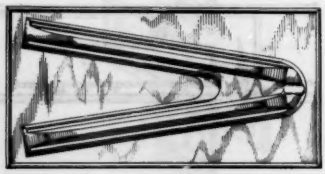
264,577
ANTI-SWAY ATTACHMENT FOR DUMP TRAILER
David R. Neilson, 809 Second St., Woodland, Calif. 95695, assignor to David R. Neilson, Woodland; Loren H. Taber, Capay and Stefan Fuchslin, Woodland, all of, Calif.
Filed Aug. 16, 1979, Ser. No. 67,101
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



264,578
GAS CAP FOR VEHICLE TANKS
Pick Gaston, 3913 Springfield, Kansas City, Kans. 66100
Filed May 9, 1980, Ser. No. 148,552
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197

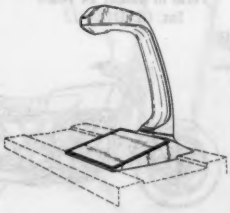


264,579
PORTABLE BOAT RAMP
Charles L. Dorsey; Donald L. Dorsey, both of Siloam Springs, and Sam M. Richardson, III, Eldorado, all of Ark.
Filed Jan. 16, 1979, Ser. No. 3,916
Term of patent 14 years
Int. Cl. 12—*06*
U.S. Cl. D12—317

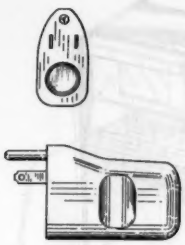


264,580
ELECTRIC BATTERY
Nigel K. McKeeman, London, England, assignor to Chloride Group Limited, London, England
Filed Sep. 27, 1979, Ser. No. 79,432
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—8

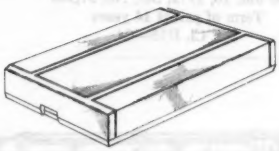
264,581
HOUSING FOR LASER OPTICAL FOCUSING ELEMENTS FOR LASER WELDING MACHINE
Wolfgang Mobius, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Apr. 20, 1979, Ser. No. 31,728
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, MR4913
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—19



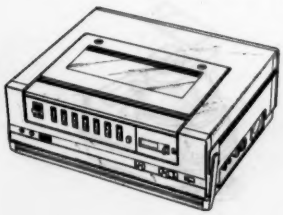
264,582
PLUG FOR ELECTRIC CORD
Douglas Drew, Toronto, Canada, assignor to Noma Canada Ltd., Scarborough, Canada
Filed Mar. 16, 1979, Ser. No. 20,972
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



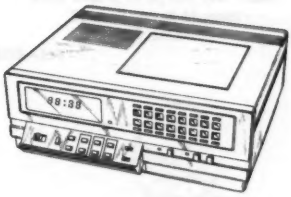
264,583
ELECTRONIC PACKAGE
Bayard F. Kessler, Woodland Hills, Calif., assignor to Novation, Inc., Tarzana, Calif.
Filed Mar. 19, 1980, Ser. No. 131,653
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41



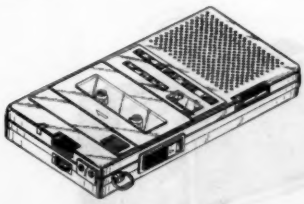
264,584
VIDEO TAPE RECORDER
Kazuhiko Nagata, Katano; Kenji Nishiyama, Hirakata; Shinji Makino, Ikoma, and Mitsuo Takanaga, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 24, 1980, Ser. No. 143,252
Claims priority, application Japan, Oct. 31, 1979, 54-46074
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—02



264,585
COMBINED VIDEO TAPE RECORDER TUNER AND CLOCK
Mitsuo Takanaga, Kyoto; Kazuhiko Nagata, Katano; Kenji Nishiyama, Hirakata, and Shinji Makino, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 25, 1980, Ser. No. 143,683
Claims priority, application Japan, Oct. 31, 1979, 54-46075
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—02



264,586
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 19, 1980, Ser. No. 188,960
Claims priority, application Japan, Mar. 26, 1980, 55-11800
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



264,587

HINGED BOOM ARM FOR A MICROPHONE HEADSET

Brian A. Lowe, Cheshunt, England, assignor to Racal Acoustics Limited, Wembley, England

Filed Aug. 24, 1979, Ser. No. 69,499

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—36

264,588

PORTABLE RADIO

Peter H. J. van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

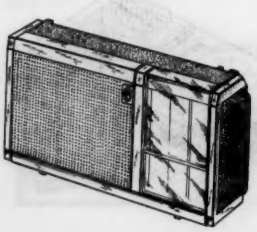
Filed Jul. 30, 1979, Ser. No. 62,438

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, URA 134/79

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—70



264,589

INFORMATION DISPLAY SYSTEM

Aubrey N. Yuen, La Palma, Calif., assignor to T.V.R. Enterprises, Inc., La Palma, Calif.

Filed Aug. 14, 1979, Ser. No. 66,506

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—102

264,590

ARTICULATED BLASTHOLE DRILLING VEHICLE

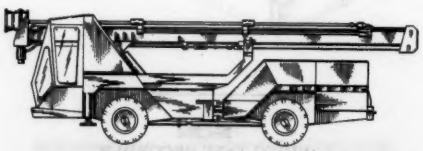
G. Richard Thomas, Fairview, Okla., assignor to Ewbank Mfg. Division, Inc., Fairview, Okla.

Filed Jul. 16, 1979, Ser. No. 57,930

Term of patent 14 years

Int. Cl. D15—*04*

U.S. Cl. D15—21



264,591

WET AND DRY VACUUM CLEANER

Paul G. Jacobs, 9958 Amestoy Ave., Northridge, Calif. 91325

Filed Mar. 17, 1980, Ser. No. 131,144

Term of patent 14 years

Int. Cl. D15—*05*

U.S. Cl. D32—21

264,592

THERMOELECTRIC JUG COOLER

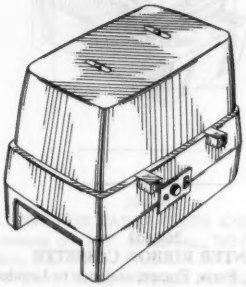
Kingstone L. H. Reed, Barrie, and Peter S. Wardell, Newmarket, both of Canada, assignors to Koolatron Industries, Ltd., Barrie, Canada

Filed Mar. 26, 1980, Ser. No. 134,171

Term of patent 14 years

Int. Cl. D15—*07*

U.S. Cl. D15—79



264,593

BULK DISPENSER OR SIMILAR ARTICLE

Michael M. Lyons, 1237 Morning Glory Dr., Concord, Calif. 94521

Filed Sep. 4, 1979, Ser. No. 72,456

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—111

264,594

BULK DISPENSER OR SIMILAR ARTICLE

Michael M. Lyons, 1237 Morning Glory Dr., Concord, Calif. 94521

Filed Sep. 4, 1979, Ser. No. 72,457

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—111

264,595

BULK DISPENSER OR SIMILAR ARTICLE

Michael M. Lyons, 1237 Morning Glory Dr., Concord, Calif. 94521

Filed Sep. 4, 1979, Ser. No. 72,567

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—111

264,596

BULK DISPENSER OR SIMILAR ARTICLE

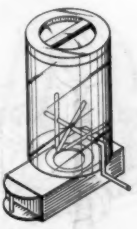
Michael M. Lyons, 1237 Morning Glory Dr., Condord, Calif. 94521

Filed Sep. 4, 1979, Ser. No. 72,790

Term of patent 14 years

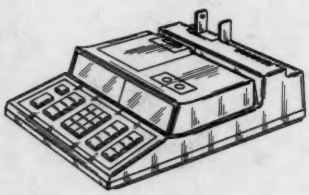
Int. Cl. D15—*99*

U.S. Cl. D15—111

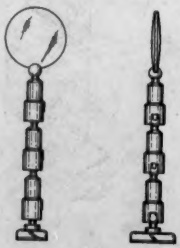


264,597
FILMSTRIP VIEWER
Kenneth Young, 33 Hitching Post La., Glen Cove, N.Y. 11542
Filed Mar. 17, 1980, Ser. No. 131,395
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—17

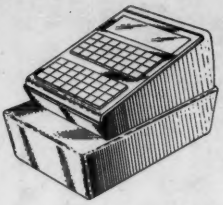
264,598
MAGNIFIER
Wesley E. Matthews, 2523 Andros La., Fort Lauderdale, Fla. 33312, and Bernard J. Lasky, 1320 NW. 179th St., Miami, Fla. 33169
Filed Jul. 26, 1978, Ser. No. 928,256
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D16—135



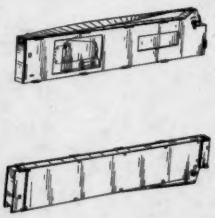
264,599
ELECTRONIC CASH REGISTER
Junichi Sakamoto, and Harumi Tatsugami, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 27, 1980, Ser. No. 125,127
Claims priority, application Japan, Sep. 5, 1979, 54-37366
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



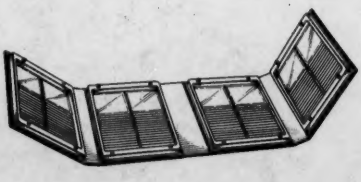
264,600
KEY BOARD FOR ELECTRONIC CASH REGISTER
Tsutomu Yamasaki, and Harumi Tatsugami, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 8, 1980, Ser. No. 166,895
Claims priority, application Japan, Jan. 10, 1980, 55-434
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



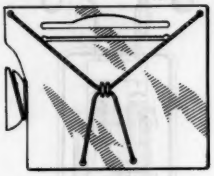
264,601
PRINTER RIBBON CASSETTE
Bernard Flaceliere, Paris, France, assignor to Logabax, France
Filed Sep. 29, 1978, Ser. No. 947,312
Claims priority, application France, Mar. 31, 1978, 41226
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12



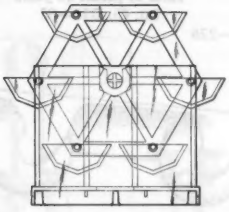
264,602
PHOTOGRAPH ALBUM
Sheldon Plutsky, Chatsworth, Calif., assignor to Pioneer Photo Albums, Inc., Chatsworth, Calif.
Filed Dec. 26, 1979, Ser. No. 106,475
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26



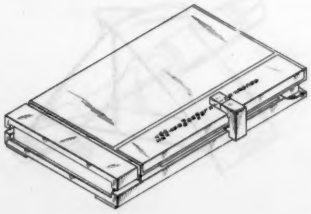
264,603
SLING-SUPPORTED DRAWING BOARD OR SIMILAR ARTICLE
Steven A. Mickelsen, 9005 Balsa, Cucamonga, Calif. 91730
Filed Apr. 17, 1980, Ser. No. 141,264
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—52



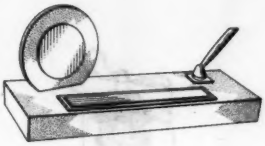
264,604
DESK UNIT FOR PAPER CLIPS AND SUNDRIES
Howard Sussman, c/o F. F. Adams Inc., 700 NW. 8th Ave., Fort Lauderdale, Fla. 33311
Filed Dec. 4, 1979, Ser. No. 100,103
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



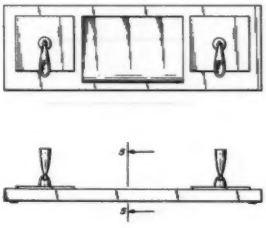
264,605
LIST FINDER
William S. Leib, III, Newton, N.J., assignor to The Bates Manufacturing Company, Hackettstown, N.J.
Filed Oct. 3, 1979, Ser. No. 81,384
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



264,606
COMBINED PEN HOLDER AND PLAQUE
Julia M. Pinera, 260 SW. 10 St., #3, Miami, Fla. 33130, and Elsa L. Delgado, 187 NW. 51 Ave., Miami, Fla. 33126
Filed Nov. 13, 1978, Ser. No. 959,870
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



264,607
DUAL PEN HOLDER
Robert C. Bradbury, 26 Halsey La., Closter, N.J. 07624
Filed Nov. 26, 1979, Ser. No. 97,529
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—85

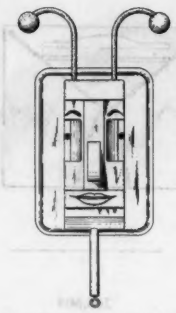


264,608
TOY AUTOMOBILE
James F. Mariol, Cincinnati, Ohio, assignor to Design Alliance, Inc., Cincinnati, Ohio
Filed Feb. 4, 1980, Ser. No. 118,201
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—78

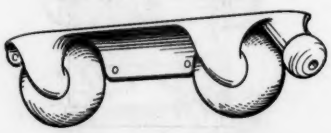
264,609
DOLL
Tara A. Amato, Long Beach, N.Y., assignor to ATC Greeting Card Co., Atlantic Beach, N.Y.
Filed Jun. 4, 1979, Ser. No. 44,847
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

264,610
DOLL
Donna S. Galbreath, 1228 F Fidalgo Bay Rd., Anacortes, Wash. 98221
Filed Mar. 13, 1980, Ser. No. 130,004
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—170

264,611
TOY MASK
Mary W. Geer, 14024 SE. 44th. Pl., Bellevue, Wash. 98006
Filed Aug. 13, 1979, Ser. No. 66,180
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—190



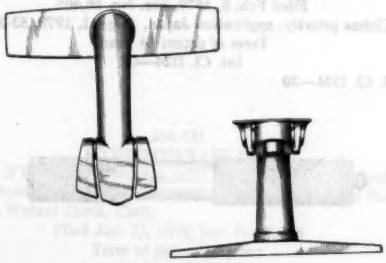
264,612
TWO-WHEELED SKATE
Alexander Szegi, 3915 Calle Cita, Santa Barbara, Calif. 93110
Filed Mar. 17, 1980, Ser. No. 130,854
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226



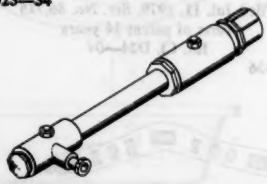
264,613
TENT
Charles W. Moss, c/o Moss Tent Works, Mt. Battle St., Camden, Me. 04843
Filed Jun. 1, 1979, Ser. No. 44,593
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

264,614
CONTAINER FOR AN OIL FILTER OR THE LIKE
Lester L. Johnson, Sr., 6175 Fordham Clr., East, Jacksonville, Fla. 32217
Filed Aug. 22, 1979, Ser. No. 68,693
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

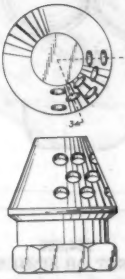
264,615
FAUCET
Dwight N. Johnson, San Marcos, Calif., assignor to JH Industries, Inc., San Marcos, Calif.
Filed May 8, 1980, Ser. No. 147,703
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



264,616
FOAM GENERATOR FOR A CAR WASH OR THE LIKE
Donald A. Hull, 6660 Woodman, Dept. 105, Van Nuys, Calif. 91405
Filed Mar. 26, 1980, Ser. No. 134,304
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



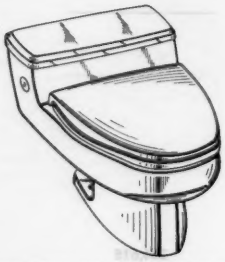
264,617
FIRE EXTINGUISHANT DISCHARGE NOZZLE
Alan J. Freeman, Worcester, Mass., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Dec. 14, 1979, Ser. No. 103,531
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



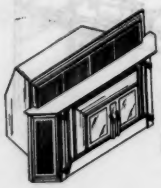
264,618
STOOL FOR INVALIDS OR THE LIKE
Thomas P. Hurley, 180 Hastings Parade, North Bondi, New South Wales 2026, Australia
Filed Aug. 15, 1979, Ser. No. 66,786
Claims priority, application Australia, Apr. 30, 1979, 77,711
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

264,619
LAVATORY OR SIMILAR ARTICLE
Louise I. Castleberry, 849 N. Center St., Baldwin, Fla. 32234
Filed Nov. 5, 1979, Ser. No. 90,939
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62

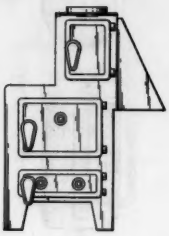
264,620
WATER CLOSET OR SIMILAR ARTICLE
Jack N. Kaiser, Danville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Jul. 21, 1980, Ser. No. 170,402
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



264,621
FIREPLACE INSERT
Charles P. Becker, Jr., Olivette, Mo., assignor to Charles Becker Associates, Inc., Fenton, Mo.
Filed Jun. 9, 1980, Ser. No. 157,987
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



264,622
STOVE
Donald R. Jackson, and Donald R. Jackson, both of P.O. Box 195, Malta, Ohio 43758
Filed Mar. 28, 1980, Ser. No. 135,086
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

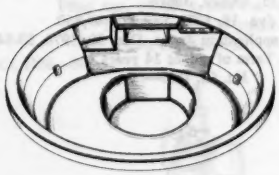


264,623
BLOOD FLOW DETECTOR
Masuo Sugawara, Tokorozawa, and Hiroji Matsumoto, Kawasaki, both of Japan, assignors to Hayashi Denki Company Ltd., Kanagawa, Japan
Filed Feb. 8, 1979, Ser. No. 10,405
Claims priority, application Japan, Aug. 11, 1978, 53-34165
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—20

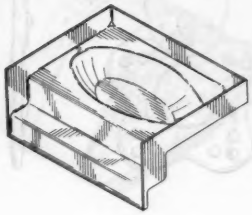
264,624
MASSAGING BAND
An C. Wu, 4F-1, No. 58, Hsin-Yi Rd., Sec. 4, Taipei, Taiwan
Filed Jul. 11, 1979, Ser. No. 56,715
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—36

264,625
PHYSIOTHERAPEUTIC APPLIANCE ROLLER
Desmond K. Shiu, Allston, Mass., assignor to Matrix International Industries, Inc., Boston, Mass.
Filed Mar. 14, 1980, Ser. No. 130,510
Term of patent 14 years
Int. Cl. D24—*04;* D28—*03*
U.S. Cl. D24—36

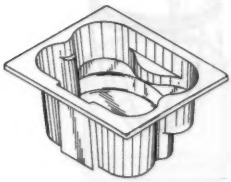
264,626
HYDROTHERAPY SPA
Ralph D'Innocente, Pleasant Hill, and Richard L. Janosko, Oakland, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc., Walnut Creek, Calif.
Filed Jan. 22, 1979, Ser. No. 5,404
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D24—38



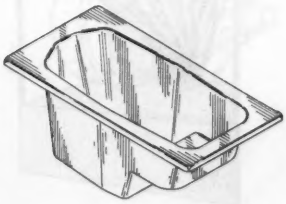
264,627
HYDROTHERAPY POOL
Thomas H. Longmire, Spokane, Wash., assignor to Holiday Pools Corporation, Spokane, Wash.
Filed Mar. 10, 1980, Ser. No. 128,973
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



264,628
HYDROTHERAPY POOL
Thomas H. Longmire, Spokane, Wash., assignor to Holiday Pools Corporation, Spokane, Wash.
Filed Mar. 10, 1980, Ser. No. 128,974
Term of patent 14 years
Int. Cl. D24—*01;* D23—*2;* D25—*99*
U.S. Cl. D24—38



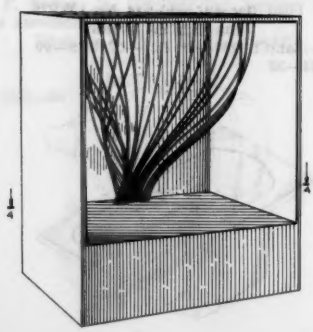
264,629
HYDROTHERAPY POOL
Thomas H. Longmire, Spokane, Wash., assignor to Holiday Pools Corporation, Spokane, Wash.
Filed Mar. 10, 1980, Ser. No. 128,975
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



264,630
TEETHING TOY
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1980, Ser. No. 140,541
Term of patent 14 years
Int. Cl. D24—*04;* D21—*01*
U.S. Cl. D24—45

264,631
SANITARY PANTS FOR URINAL RECEPTACLES
Ulla I. Forsberg, Halmstad, Sweden, assignor to Duni Bilå AB, Sweden
Filed Apr. 24, 1979, Ser. No. 33,030
Claims priority, application Sweden, Oct. 30, 1978, 782498
Term of patent 7 years
Int. Cl. 24—*04*
U.S. Cl. D24—51

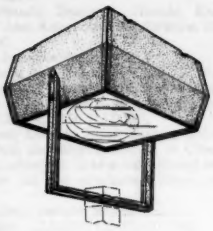
264,632
FIBER OPTIC LIGHT DISPLAY
Thomas L. Tiffany, Pottersville, N.J., assignor to Fiber Optics Systems, Inc., Gladstone, N.J.
Filed Dec. 12, 1979, Ser. No. 103,078
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—27



264,633
LAMP
Jerome T. Pearlman, Oakland, N.J., assignor to Basic Concept Ltd., Paterson, N.J.
Filed May 7, 1979, Ser. No. 36,589
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—62

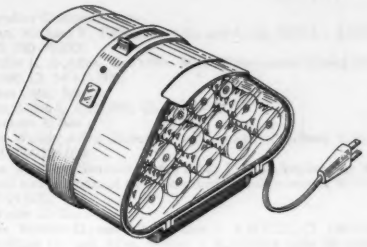
264,634
SWING ARM LAMP
Tadahide Okuno, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 18, 1979, Ser. No. 49,860
Claims priority, application Japan, Dec. 20, 1978, 53-54138
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—65

264,635
LUMINAIRE
Elzear R. Labouliere, Swansea; Albert J. Michaud, Foxboro, and Hendrik A. J. de Vos, Swansea, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Mar. 29, 1979, Ser. No. 25,256
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—67



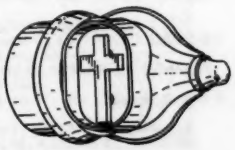
264,636
SWAG LAMP
Donald A. Kvasnicka, 718 N. Logan, Colorado Springs, Colo. 80909
Filed Apr. 18, 1979, Ser. No. 31,122
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—84

264,637
HAIR SETTER
George Barradas, Greenwich, Conn., assignor to Appliance Design Probe, Inc., Scarborough, Canada
Filed Apr. 22, 1980, Ser. No. 142,716
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—38



264,638
CONTAINER FOR LIQUIDS UNDER PRESSURE
Kenichi Maeda, Neyagawa, Japan, assignor to The Nippon Aluminium Mfg. Co., Ltd., Osaka, Japan
Filed Apr. 21, 1980, Ser. No. 142,619
The portion of the term of this patent subsequent to May 25, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D34—39

264,639
CASKET HANDLE TIP
Angelo Pane, Chicago, Ill., assignor to The Merit Company, Chicago, Ill.
Filed Feb. 29, 1980, Ser. No. 125,769
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D99—11



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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Braun, Karl; Hilzinger, Fritz; and Wintermantel, Erich, 4,331,150, Cl. 128-334.00C.
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Noerholm, Olav, 4,331,947, Cl. 337-159.000.

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Olander, Karl E., 4,331,102, Cl. 119-14.080.

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Myhr, Lars H., 4,331,309, Cl. 244-110.00A.

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Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., to International Business Machines Corporation. Multiple data rate digital switch for a TDMA communications controller. 4,332,026, Cl. 370-66.000.

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Remley, Kenneth H., 4,331,437, Cl. 8-115.700.

American District Telegraph Company: *See—*
Galvin, Aaron A.; and Flynn, Kevin D., 4,331,952, Cl. 340-508.000.

American Electronic Laboratories, Inc.: *See—*
Batzdorff, Alfred, 4,331,866, Cl. 250-231.0SE.

American Hoechst Corporation: *See—*
Tomasi, Thomas G.; and Bell, Marilyn A., 4,331,572, Cl. 524-238.000.

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AMP Incorporated: *See—*
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Werner, Walter M., 4,330,906, Cl. 24-136.00R.

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Ryan, John O., 4,331,980, Cl. 358-217.000.

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Andary, Eddie J., to Wico Corporation. Lift device for pinball game. 4,331,324, Cl. 254-2.00R.

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Soderholm, Leo H.; and Andrew, James F., 4,331,881, Cl. 290-44.000.

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Aono, Masami: *See—*
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Araki, Michio: *See—*
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Schenk, Wolfgang; Kothe, Wilfried; and Popp, Karl H., 4,331,539, Cl. 210-620.000.
BASF Wyandotte Corporation: *See*—
Christman, Donald L.; and Kan, Peter T., 4,331,809, Cl. 544-238.000.
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Pai, Panemangalore S., 4,331,438, Cl. 8-187.000.
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Batzdorff, Alfred, to American Electronic Laboratories, Inc. Electromechanical digital feed control. 4,331,866, Cl. 250-231.0SE.
Bauer, James J.; Wart, William M.; and Hansen, Howard C., to Clark Equipment Company. Ventilation system for electric vehicles. 4,331,209, Cl. 180-54.00A.
Bauer, Martin G. Still. 4,331,514, Cl. 202-181.000.
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Bauman, Verne W.; and See, Gary R. Planar coordinate resolving system. 4,331,954, Cl. 340-706.000.
Baumbach, Bertram W., to Reliable Electric Company. Telephone distribution frame connector assembly. 4,331,839, Cl. 179-98.000.
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Chung, Daniel C.; Miller, William A.; and Baumgaertner, Eugene R., 4,331,619, Cl. 264-13.000.
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Idel, Karsten; and Merten, Josef, 4,331,801, Cl. 528-388.000.
Kramer, Wolfgang; Stetter, Jorg; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,331,674, Cl. 424-269.000.
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Uhlig, Heinrich; Langheinrich, Klaus; and Hendricks, Udo-Winfried, 4,331,442, Cl. 8-564.000.
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Baylis, Eric K., to Ciba-Geigy Corporation. Chemical process for the production of α-aminophosphonic acids and peptide derivatives. 4,331,591, Cl. 260-112.50R.
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Schwarzenbach, Alfred, 4,330,997, Cl. 60-678.000.
Beale, William T., to Sunpower, Inc. Hydrodynamic lubrication system for piston devices particularly Stirling engines. 4,330,993, Cl. 60-520.000.
Becht, Reimund; and Bohm, Peter, to ITT Industries, Inc. Vacuum brake booster. 4,330,996, Cl. 60-581.000.
Beck, Doyle, Jr. Storage battery structure. 4,331,749, Cl. 429-179.000.
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Becker, Udo; Braun, Konrad; and Heimburger, Norbert, to Behringwerke Aktiengesellschaft. Collagen solution, process for its manufacture and its use. 4,331,766, Cl. 435-273.000.
Beckley, Philip, to British Steel Corporation. Apparatus for magnetic testing ferromagnetic sheet or strip material using rectangular coils. 4,331,919, Cl. 324-222.000.
Bedford, Raymond E.: *See*—
Schaefer, Carl F.; and Bedford, Raymond E., 4,331,565, Cl. 252-462.000.
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Hadley, Michael S., 4,331,816, Cl. 564-164.000.
Beer, Henri B.; and Hinden, Jean M., to Diamond Shamrock Corporation. Coated metal electrode with improved barrier layer. 4,331,528, Cl. 204-290.00F.
Beffa, Fabio; and Back, Gerhard, to Ciba-Geigy Corporation. Arylazoarylazo-substituted azo, azomethine 1:2 chromium complex dyes. 4,331,596, Cl. 260-145.00A.
Behensky, Gerhard; and Lux, Wilhelm, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Method for making a very pure silicon. 4,331,698, Cl. 427-50.000.
Behman, Rafik R. N. Cover and compacting assembly for trash cans. 4,331,074, Cl. 100-215.000.
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Becker, Udo; Braun, Konrad; and Heimburger, Norbert, 4,331,766, Cl. 435-273.000.
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Bekooij, Jurrianus; Raudenbusch, Werner T.; and Stachowiak, Stephen A., to Shell Oil Company. Process for preparation of water-thinnable epoxy resins. 4,331,574, Cl. 525-530.000.
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Belinsky, Sidney I. Floating dolphin. 4,331,097, Cl. 114-230.000.
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Bell Telephone Laboratories, Incorporated: *See*—
Fleming, James W., Jr.; MacChesney, John B.; and O'Connor, Paul B., 4,331,462, Cl. 65-3.120.
Ingram, Arthur J.; and Weingrod, Irving, 4,331,831, Cl. 174-52.0FP.
Sparber, Richard G., 4,331,913, Cl. 323-303.000.
Beloit Corporation: *See*—
Goddard, Denis A.; and Wallis, Robert L., 4,331,511, Cl. 162-352.000.
Bendell, Sidney L., to RCA Corporation. Line-scan still image reproducer. 4,331,979, Cl. 358-209.000.
Bendix Corporation, The: *See*—
Caruso, Peter J., 4,331,845, Cl. 200-45.000.
Cummings, Willard, 4,330,923, Cl. 29-434.000.
Hood, Edwin E., 4,330,914, Cl. 29-159.010.
Benham, Albert A., to Champion International Corporation. Multiple pocket, expandable envelope, and blank and method for forming same. 4,331,290, Cl. 229-72.000.
Benjamin, Charles M. Manufacture of solar collector panels. 4,331,503, Cl. 156-633.000.
Bennett, Arthur G. Low vibration engine. 4,331,111, Cl. 123-192.00B.
Bennett, William G., to Teleflex Incorporated. Motion transmitting remote control assembly. 4,331,041, Cl. 74-501.50R.
Benteler, Hubertus; Streubel, Wolfgang; and Olszewski, Egon, to Benteler-Werke AG. Tube bending machine with axially movable inner core. 4,331,015, Cl. 72-133.000.
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Bentley, Paul E.: *See*—
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Bentley, Stanley L.; and Jessup, David G., to Ransburg Corporation. Hand-held coating-dispensing apparatus. 4,331,298, Cl. 239-690.000.
Berecz, Imre, to Bristol Industries. Article transfer device. 4,331,416, Cl. 414-226.000.
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Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., 4,330,899, Cl. 15-326.000.
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Diagnostic agent for the detection of leukocytes and chromogens useful therein. 4,331,760, Cl. 435-19.000.
Berger, Michael; and Koberstein, Edgar, to Degussa Aktiengesellschaft. Process for the production of ((mono-trichloro)-tetra-(monopotassium-dichloro))-penta-isocyanurate). 4,331,519, Cl. 204-72.000.
Bergmann, Ewald; and Dommer, Hans-Martin, to L. Schuler GmbH. Numerically controlled automatic notching press. 4,331,049, Cl. 83-71.000.
Berisch, Volker, to ITT Industries, Inc. Brake pressure control unit for vehicle brake systems. 4,331,363, Cl. 303-6.00C.
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Berntsen, Robert G., to A/S Tomra Systems. Method, apparatus and transducer for measurement of dimensions. 4,332,016, Cl. 367-7.000.
Berton, Yves; and Chauvet, Pierre, to Commissariat a l'Energie Atomique. Method of removing ruthenium contamination from radioactive effluents. 4,331,551, Cl. 252-631.000.
Best, Albert B., to Kanthal Corporation, The. Hairpin-type electric resistance heating element making. 4,330,908, Cl. 29-611.000.

BFG Glassgroup: *See*—
Duchateau, Jacques; and Nicolas, Maurice, 4,331,494, Cl. 156-87.000.
Janssens, Theo; and Willems, Victor, 4,331,282, Cl. 228-124.000.
Bhargava, Pushpa M.: *See*—
Scheit, Karl H.; Reddy, Ergam R. S. P.; Murti, Tangirala R.; Pandit, Madhusudan W.; and Bhargava, Pushpa M., 4,331,764, Cl. 435-199.000.
Biddlecom, William G.: *See*—
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., 4,331,688, Cl. 424-331.000.
Binks Manufacturing Company: *See*—
Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., 4,331,299, Cl. 239-691.000.
Birchall, James D.: *See*—
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Bis, Richard F.: *See*—
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Bischlipp, Klaus; and Pfeiffer, Jurgen, to Eduard Hueck, Firma. Method of manufacturing a connecting element. 4,330,919, Cl. 29-418.000.
Bishop, Thomas R., to Bowen Tools, Inc. Shock absorber assembly. 4,331,006, Cl. 464-18.000.
Bjornson, Geir, to Phillips Petroleum Company. Catalyst for hydrodealkylation process. 4,331,566, Cl. 252-466.00J.
Bjursell, Gunnar: *See*—
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, 4,331,662, Cl. 424-180.000.
Blackall, Victor G.; and Daisley, Robert T., to Molins Limited. Packing machines. 4,330,976, Cl. 53-151.000.
Blair, Thomas G., Jr.; and Kummer, Alfred C., to Western Electric Company, Inc. Methods of and apparatus for assembling contact elements with a housing to form a contact module. 4,330,935, Cl. 29-884.000.
Blanchard, Clarence E., to Outboard Marine Corporation. Hydraulically actuated two-speed transmission for a marine propulsion device. 4,331,432, Cl. 440-75.000.
Blasinachim S.p.A.: *See*—
Bonaldi, Antonio; and Molinari, Egidio, 4,331,607, Cl. 260-397.100.
Blatz, Glenroy G.; and Petersen, Burdette A., to H. G. Weber & Co., Inc. Automatic bundle forming apparatus. 4,331,415, Cl. 414-52.000.
Blechmann, Rudi, to Klingelnberg Sohne. Length-measuring probe for measurement. 4,330,942, Cl. 33-169.00R.
Blevins, Gerald G.; Fairbank, Fred S.; Hixson, Wayne E.; and Knowlton, Reginald F., to Boeing Company, The. Communication system for use in hazardous confined areas. 4,331,953, Cl. 340-539.000.
Blevins, Maurice E.; and Carlson, Gilbert E., to Steel Heddle Manufacturing Company. Dent counter for loom reed. 4,331,865, Cl. 250-222.0PC.
Block, Hans-Dieter: *See*—
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; Reinking, Klaus; Rohr, Harry; and Block, Hans-Dieter, 4,331,614, Cl. 260-930.000.
Blount, David H. Process for the production of vinyl polymer-polyol-alkali metal silicate emulsion. 4,331,578, Cl. 524-791.000.
Bocuslaski, Robert C.; Burd, John F.; and Carrico, Robert J., to Miles Laboratories, Inc. β-Galactosyl-umbelliferone-labeled protein and polypeptide conjugates. 4,331,590, Cl. 260-112.00B.
Boden, Richard M., to International Flavors & Fragrances Inc. 1-N-Butoxy-1-ethanol acetate useful for augmenting or enhancing the aroma of perfume materials. 4,331,571, Cl. 252-522.00R.
Bodenmann, Peter, to Steinmann, Albin, a part interest. Ash-tray. 4,331,164, Cl. 131-235.00R.
Boehringer Mannheim GmbH: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, 4,331,760, Cl. 435-19.000.
Boeing Company, The: *See*—
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Caldwell, Jack H.; and Llewellyn, Peter, 4,331,338, Cl. 277-58.000.
Fitch, Robert E.; and Tyer, Robert C., 4,331,084, Cl. 110-186.000.
Fitch, Robert E.; and Tucker, Gordon H., 4,331,086, Cl. 110-204.000.
Hamm, Robert A., 4,331,723, Cl. 428-61.000.
Howard, Bruce S.; and Walters, William O., 4,331,026, Cl. 73-81.000.
Boero, Angioletta: *See*—
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.
Boersma, Michael A. M.; Post, Martin F. M.; and Schaper, Lambert, to Shell Oil Company. Process for the preparation of hydrocarbons. 4,331,774, Cl. 518-714.000.
Bohm, Peter: *See*—
Becht, Reimund; and Bohm, Peter, 4,330,996, Cl. 60-581.000.
Boisvenue, Rudolph J.: *See*—
Ludwig, Nelson H.; and Boisvenue, Rudolph J., 4,331,652, Cl. 424-19.000.
Bolen, Robert D. Water and snow planing board. 4,331,340, Cl. 280-12.00R.
Bolger, John G. Power control system for electrically driven vehicle. 4,331,225, Cl. 191-10.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,330,986, Cl. 56-377.000.
Bonaldi, Antonio; and Molinari, Egidio, to Blasinachim S.p.A. Process for the purification of chenodeoxycholic acid. 4,331,607, Cl. 260-397.100.
Bond, Curtis J., to Liqui-Box Corporation. Finger-actuated slideable-gate dispensing valve. 4,331,266, Cl. 222-107.000.
Bonink, Johannes A., to Copreal S.A. Building structure and steel parts for same. 4,330,970, Cl. 52-125.000.
Bonser, John R., to B. F. Goodrich Company, The. Awning and method of making same. 4,331,169, Cl. 135-5.0AT.
Bookout, Charles C.; and Stockton, Thomas R., to Ford Motor Company. Four speed offset automatic overdrive transmission with lockup in direct and overdrive. 4,331,044, Cl. 74-688.000.
Booth, Peter A. Toothbrushes. 4,330,896, Cl. 15-172.000.
Boots Company, The: *See*—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,331,680, Cl. 424-303.000.
Borg-Warner Chemicals, Inc.: *See*—
Valdiserri, Leo L.; and Bullock, Elyse M., 4,331,585, Cl. 524-103.000.
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Bose, Phillip R., to Chevron Research Company. Method for recovering bitumen from tar sand. 4,331,532, Cl. 208-11.0LE.
Bottenbruch, Ludwig: *See*—
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Zabrocki, Karl; Bottenbruch, Ludwig; and Weider, Franz, 4,331,573, Cl. 524-199.000.
Bouillon, Claude; and Maignan, Jean, to L'Oreal. Composition and process for reducing the oily appearance of the hair and skin. 4,331,656, Cl. 424-70.000.
Bourque, Donald L., to Dennison Manufacturing Company. Dispensing of attachment members. 4,331,276, Cl. 227-8.000.
Bowden, William L.: *See*—
Dey, Arabinda N.; and Bowden, William L., 4,331,743, Cl. 429-50.000.
Bowen Tools, Inc.: *See*—
Bishop, Thomas R., 4,331,006, Cl. 464-18.000.
Boyd, David C.; Lu, Kun-Er; and Tarcza, Walter H., to Corning Glass Works. Earthenware-appearing glazes for dinnerware. 4,331,768, Cl. 501-18.000.
Boyle, Daniel J., to Champion International Corporation. Display tray with tilt platform. 4,331,231, Cl. 206-45.250.
Bradley, James B., Jr. Ophthalmic fitting set and method. 4,331,393, Cl. 351-88.000.
Bradley, Ronald F.: *See*—
Sutcliffe, Grenville G.; Bradley, Ronald F.; and Mercer, Paul D., 4,331,190, Cl. 141-392.000.
Bradshaw, William, to Tweedy of Burnley Limited. Treatment of foodstuffs. 4,331,690, Cl. 426-233.000.
Brady, Donnie G., to Phillips Petroleum Company. Flame retardant transparent resinous copolymer. 4,331,780, Cl. 524-101.000.
Brake, Arthur L.; and Harper, David A. C., to Bristol Aerojet Limited. Mounting of pressure vessels. 4,331,175, Cl. 137-322.000.
Bramley, Richard G.; and Anderson, Thomas P., Jr., to Microseal Corporation. Apparatus and method for inserting strips of microfilm into microfilm jackets. 4,330,980, Cl. 53-473.000.
Brandes, Siegfried; Gutsch, Uwe; Leithner, Dietrich; and Presser, Wolfgang, to Hochtemperatur-Reaktorbau GmbH. Paired absorber elements for gas cooled high temperature reactors. 4,332,030, Cl. 376-226.000.
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Kramer, Wolfgang; Stetter, Jorg; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,331,674, Cl. 424-269.000.
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Branemark, Per I.; and Thuresson af Ekenstam, Bo. Element for implantation in body tissue, particularly bone tissue. 4,330,891, Cl. 3-1.000.
Brantingham, George L.: *See*—
Wiggins, Richard H., Jr.; and Brantingham, George L., 4,331,836, Cl. 179-1.0SM.
Brauer, Juergen; and Schuck, Wolf-Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method and apparatus for detecting a defective object on a lane or track. 4,331,959, Cl. 343-18.00A.
Braun, Franz: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, 4,331,760, Cl. 435-19.000.
Braun, Karl; Hilzinger, Fritz; and Wintermantel, Erich, to Aesculap-Werke Aktiengesellschaft Vormals Jetter & Scheerer. Approximator for anastomotic surgery. 4,331,150, Cl. 128-334.00C.
Braun, Konrad: *See*—
Becker, Udo; Braun, Konrad; and Heimburger, Norbert, 4,331,766, Cl. 435-273.000.
Braunschweigische Maschinenbauanstalt: *See*—
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Braymer, George W., Jr., to Upjohn Company, The. Activation closure for vial. 4,331,233, Cl. 206-221.000.
Bremmer, Bart J., to Dow Chemical Company, The. Hydraulic fluids containing cyano derivatives of ketones. 4,331,549, Cl. 252-77.000.
Brennen, John F.: *See*—
Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., 4,332,026, Cl. 370-66.000.

Bretl, Wayne E., to Zenith Radio Corporation. Mode decision controller for selectively actuating a chrominance bandwith enhancement in a television receiver. 4,331,971, Cl. 358-37.000.
Bretz, George M., to Koppers Company, Inc. Gasification reactor and feed apparatus. 4,331,448, Cl. 48-86.00A.
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Brewer, John H.; and Foster, Terry L., to Science Research Center, Inc. Identification of reagins in the blood serum of allergen sensitized vertebrates. 4,331,650, Cl. 424-12.000.
Briere, Alfred D.; and Klein, Richard M., to GTE Laboratories Incorporated. Self-centering apparatus for making optical fibers. 4,331,463, Cl. 65-13.000.
Bright, Edward J., to AMP Incorporated. Substrate connector system utilizing a contact actuating bar. 4,331,372, Cl. 339-74.00R.
Brignola, Dominic J., to West Company, The. Syringe assembly. 4,331,146, Cl. 128-218.0DA.
Brihay, Jacques: *See*—
Langenfeld, Wilhelm; and Brihay, Jacques, 4,331,471, Cl. 75-59.000.
Bristol Aerojet Limited: *See*—
Brake, Arthur L.; and Harper, David A. C., 4,331,175, Cl. 137-322.000.
Bristol Industries: *See*—
Berecz, Imre, 4,331,416, Cl. 414-226.000.
British Gas Corporation: *See*—
Elliott, Richard P., 4,331,450, Cl. 48-210.000.
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Beckley, Philip, 4,331,919, Cl. 324-222.000.
Broadwater, Ronald L.; Haynes, Russell R.; and Mitry, Samah A., to Tech Engineering & Design; and Broadwater, Ronald L., Sr. Blood pressure and heart rate measuring watch. 4,331,154, Cl. 128-677.000.
Broadwater, Ronald L., Sr.: *See*—
Broadwater, Ronald L.; Haynes, Russell R.; and Mitry, Samah A., 4,331,154, Cl. 128-677.000.
Brockmeyer, Jerry W., to Swiss Aluminium Ltd. Method for bonding a gasket seal to surface of ceramic foam filter. 4,331,621, Cl. 264-44.000.
Brodowski, Walter; and Wallrabenstein, Michael, to Akzona Incorporated. Zinc containing terephthaloyl-terephthal/oxal copolyhydrazide composition. 4,331,588, Cl. 524-439.000.
Broenner, Karlheinz: *See*—
Amtmann, Heribert; Broenner, Karlheinz; and Seissl, Johann, 4,331,876, Cl. 250-402.000.
Brooks & Perkins, Incorporated: *See*—
Graf, Michael C., 4,331,412, Cl. 410-69.000.
Brooks, William R.; and Heinzel, Irving C. Combination foam/bandage dispenser for use in making a medical cast. 4,331,134, Cl. 128-90.000.
Brown County Manufacturing, Inc.: *See*—
Sorenson, Robert S.; and Sorenson, James B., 4,331,205, Cl. 172-538.000.
Brown, George J., to Christopher Scientific Co., Inc. Control unit for use in a vibratory feeder system. 4,331,263, Cl. 222-63.000.
Brown, Kelly G. S. Retrofit single-newspaper security dispenser. 4,331,261, Cl. 221-232.000.
Brown, Marvin R.: *See*—
Marki, Walter E.; Brown, Marvin R.; and Rivier, Jean E. F., 4,331,661, Cl. 424-177.000.
Brown, Robert; and Setloff, Jerome. Composition for a topical cream for curtailing bleeding and treating skin disorders. 4,331,653, Cl. 424-28.000.
Brown, Robert T.; and Nighan, William L., to United Technologies Corporation. Stability enhanced halide lasers. 4,331,937, Cl. 372-74.000.
Brown, Sterling L., to Litton Industrial Products, Inc. Swing type internal grinding fixture for cylindrical grinding machines. 4,330,961, Cl. 51-3.000.
Browning, Emerson F.: *See*—
Duncan, Gail F.; Browning, Emerson F.; and Rotterman, Karl, 4,331,267, Cl. 222-153.000.
Brownstein, Scott A.; and Schauffele, Carl N., to Eastman Kodak Company. Electronic strobe flash apparatus for automatic fill-in and full-flash. 4,331,400, Cl. 354-33.000.
Bruce, Harry W., III, to Procter & Gamble Company, The. Extra thin-flaked R & G coffee with structural integrity and increased extractability. 4,331,696, Cl. 426-595.000.
Brundage, David J., to Champion International Corporation. Container with vent and blanks for forming same. 4,331,235, Cl. 206-423.000.
Bruni, Ludovico, to Associated Engineering Italy S.p.A. Cooling of diesel engine pistons. 4,331,107, Cl. 123-41.350.
Brunswick Corporation: *See*—
Koepsel, Roger E.; Steiner, Ronald M.; and Wilcox, Daniel G., 4,331,429, Cl. 440-49.000.
Lutzke, Albert J.; and Schiek, James M., 4,331,430, Cl. 440-53.000.
Moss, Elvis W., 4,331,303, Cl. 242-84.20A.
Thornber, Geoffrey, 4,331,935, Cl. 331-90.000.
Brusky, Phillis L.: *See*—
Daniel, Chelliah; and Brusky, Phillis L., 4,331,813, Cl. 560-205.000.
Bryan, T. James; Burton, Jack D.; and Tyrrell, F. Peter, to Exxon Research & Engineering Co. Method and apparatus for synchronizing facsimile transmissions. 4,331,984, Cl. 358-275.000.
Buchel, Karl H.: *See*—
Kramer, Wolfgang; Stetter, Jorg; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,331,674, Cl. 424-269.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,331,675, Cl. 424-269.000.
Buck, Brian E.: *See*—
Jewison, Charles B.; and Buck, Brian E., 4,331,397, Cl. 353-71.000.
Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Chemiluminescent naphthalene-1,2-dicarboxylic acid hydrazide-labeled haptens. 4,331,808, Cl. 544-234.000.
Buckley, Edward Z., to Hooker Chemicals & Plastics Corp. Work rack for conveying apparatus. 4,331,230, Cl. 198-484.000.
Budzich, Tadeusz. Load responsive system controls. 4,330,991, Cl. 60-427.000.
Bullinger, Henry W.; and Friesel, Clifford L., to Perkin-Elmer Corporation, The. Fabrication method for instrument material holder. 4,330,933, Cl. 29-612.000.
Bullock, Elyse M.: *See*—
Valdiserri, Leo L.; and Bullock, Elyse M., 4,331,585, Cl. 524-103.000.
Bulso, Joseph, Jr.: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,331,017, Cl. 72-350.000.
Bulso, Joseph D., Jr.; and Lewers, William R., to Bulso, Joseph, Jr. High reduction process and apparatus. 4,331,017, Cl. 72-350.000.
Bunyan, James L., to Cajon Company. Flowable anaerobic sealant composition. 4,331,580, Cl. 523-176.000.
Burcz, Lawrence D.: *See*—
Leonard, Allan S.; and Burcz, Lawrence D., 4,331,046, Cl. 74-867.000.
Burd, John F.: *See*—
Bocuslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,331,590, Cl. 260-112.00B.
Burdick Corporation, The: *See*—
Partridge, Leslie W., 4,331,158, Cl. 128-709.000.
Burgermeister, Dieter: *See*—
Ganz, Manfred; Gueldner, Enrique; and Burgermeister, Dieter, 4,331,834, Cl. 178-3.000.
Burns, Carmen D., to National Semiconductor Corporation. Gang bonding interconnect tape process and structure for semiconductor device automatic assembly. 4,331,740, Cl. 428-572.000.
Burns, Edward J., to InterNorth. Reduction of spontaneous combustion of coal. 4,331,445, Cl. 44-6.000.
Burroughs Corporation: *See*—
Demnianiuk, Eugene F., 4,331,373, Cl. 339-91.00R.
Fasig, Harold A., 4,331,328, Cl. 271-270.000.
Flora, Laurence P.; and Wiener, Daniel P., 4,331,951, Cl. 340-347.0DD.
Frandsen, Jorgen, 4,331,990, Cl. 360-106.000.
Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., 4,332,027, Cl. 370-94.000.
Sprenkle, George J., 4,331,182, Cl. 140-93.00R.
Wolfe, John E., 4,331,875, Cl. 250-398.000.
Burroughs Wellcome Co.: *See*—
Chantler, Shireen M.; and Edgar, William, 4,331,649, Cl. 424-12.000.
Bursack, William E.: *See*—
Keller, John W., Jr.; Bursack, William E.; and Coombes, Alan, 4,331,157, Cl. 128-419.00R.
Burton, Jack D.; and Fisher, Stephen D., to Exxon Research & Engineering Co. Facsimile signalling method. 4,331,983, Cl. 358-257.000.
Burton, Jack D.: *See*—
Bryan, T. James; Burton, Jack D.; and Tyrrell, F. Peter, 4,331,984, Cl. 358-275.000.
Buschor, Josef, to Pneumatic Scale Corporation. Method and apparatus for forming a container for liquids. 4,331,434, Cl. 493-67.000.
Butterworth Systems Inc.: *See*—
Haggerty, John, 4,331,254, Cl. 220-229.000.
Buttner, Kurt, to Okoma Maschinenfabrik GmbH. Woodworking machine. 4,331,191, Cl. 144-3.00R.
B.V. Interpower: *See*—
Dehue, Jozef J. E., 4,331,199, Cl. 165-39.000.
C-I-L Inc.: *See*—
Cloutier, Joseph A. R.; and Edmonds, Anthony C. F., 4,331,081, Cl. 102-318.000.
C. Van der Lely N.V.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,330,986, Cl. 56-377.000.
Cahoy, Roger P., to Gulf Oil Corporation. Process for manufacturing N-benzyl-N-isopropyl amides. 4,331,815, Cl. 564-142.000.
Cajon Company: *See*—
Bunyan, James L., 4,331,580, Cl. 523-176.000.
Caldwell, Jack H.; and Llewellyn, Peter, to Boeing Company, The. Duct seal assembly. 4,331,338, Cl. 277-58.000.
Calhoun, Thorval. Wire bending tool. 4,331,183, Cl. 140-106.000.
Calspan Corporation: *See*—
Schneider, Clayton J., Jr., 4,331,848, Cl. 200-61.45R.
Cambridge Telecommunications, Inc.: *See*—
Epstein, Richard A.; and Zannini, Henry A., 4,332,011, Cl. 364-200.000.
Campbell, David K.; and Crabtree, Luther L., to Harris Corporation. Automatic alignment system for a digital modem. 4,332,029, Cl. 371-22.000.
Campman, Arthur R.: *See*—
Parker, Leon; and Campman, Arthur R., 4,331,091, Cl. 112-262.100.
Canavesi, Roberto; Ligorati, Ferdinando; Ghezzi, Roberto; and Clemente, Roberto, to Euteco Impianti S.p.A. Process for preparing catalysts based on molybdenum and iron oxides. 4,331,567, Cl. 252-470.000.

Canon Kabushiki Kaisha: *See—*
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,331,395, Cl. 352-27.000.
Kiuchi, Masayoshi; Kawamura, Masaharu; Yamada, Masanori; and Murakami, Hiroyasu, 4,331,406, Cl. 354-128.000.
Nakazawa, Tamotsu; Ina, Kenzo; and Minagawa, Takashi, 4,332,014, Cl. 364-900.000.
Yamamoto, Hiroshi, 4,331,405, Cl. 354-126.000.

Capintec, Inc.: *See—*
Rollo, Frank D., 4,331,869, Cl. 250-252.000.

Carlsen, Christian G., administrator: *See—*
Henk, Peter O.; Piontkowski, Ziemowit A. A., deceased; and Carlsen, Christian G., administrator, 4,331,744, Cl. 429-59.000.

Carlson, Gilbert E.: *See—*
Blevins, Maurice E.; and Carlson, Gilbert E., 4,331,865, Cl. 250-222.0PC.

Carnation Company: *See—*
Shemwell, Gale A., 4,331,689, Cl. 426-98.000.

Carr, Jack: *See—*
Hall, George E.; and Carr, Jack, 4,330,981, Cl. 56-7.000.

Carren, Thomas G.; and Etkes, Asher B., to ModuTank, Inc. Modular storage tank. 4,331,252, Cl. 220-5.00A.

Carrico, Robert J.: *See—*
Bocuslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,331,590, Cl. 260-112.00B.

Carter, Richard G.: *See—*
Watson, Stuart L., Jr.; and Carter, Richard G., 4,331,704, Cl. 427-54.100.

Caruso, Peter J., to Bendix Corporation, The. Output switch assembly and operating mechanism. 4,331,845, Cl. 200-45.000.

Casabuona, Ferruccio: *See—*
Nannini, Giuliano; Perrone, Ettore; Casabuona, Ferruccio; and Grasso, Silvio, 4,331,666, Cl. 424-246.000.

Castagna, John F., to Sparkomaric Corporation. Grille covered speaker mounting assembly for automobile decks and the like. 4,331,841, Cl. 179-146.00E.

Castel, Yvon, to Institut Francais du Petrole. Device for reversing the direction of flow of a fluid at the level of a drill bit. 4,331,207, Cl. 175-317.000.

Catanzarite, Vincent O. Electrochemical cell structure. 4,331,745, Cl. 429-60.000.

Catenacci, Roberto: *See—*
Ligorati, Ferinando; Invernizzi, Renzo; and Catenacci, Roberto, 4,331,790, Cl. 526-119.000.

Caterpillar Tractor Co.: *See—*
Karraker, David O., 4,331,114, Cl. 123-198.0DB.
Reinsma, Harold L., 4,331,339, Cl. 277-84.000.
Render, Michael L.; and Armstrong, John T., Jr., 4,331,917, Cl. 324-166.000.
Rinaldo, James D.; and Vize, Robert M., 4,331,185, Cl. 141-95.000.

Cattani, Cyrus J., II. Magnetically actuatable tamper switch assembly. 4,331,945, Cl. 335-205.000.

Causey, Donald R.; and Fredericks, Owen, to Fairchild Camera and Instrument Corporation. Apparatus for crystal shaping. 4,331,452, Cl. 51-5.00R.

Centre Technique de l'Industrie des Papiers, Cartons et Celluloses: *See—*
Girard, Pierre; and Richard, Michel, 4,331,713, Cl. 427-209.000.

Centro Ricerche Fiat S.p.A.: *See—*
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.

Cerovsky, Karel: *See—*
Dvorsky, Drahomir; and Cerovsky, Karel, 4,331,441, Cl. 8-542.000.

Ceshkovsky, Ludwig; and Dakin, Wayne R., to Discovision Associates. Tracking system and method for video disc player. 4,332,022, Cl. 369-44.000.

Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone Poulenc S.A. Sulphones having a 1,5-dimethyl-hexa-1,5-dienylene group. 4,331,814, Cl. 560-255.000.

Chacour, Selim A.; and Rudacille, Calvin W., to Allis-Chalmers Corporation. Hydraulic pump/turbine discharge ring support anchorage. 4,331,314, Cl. 248-679.000.

Chadwick, Alexander, to Chrysler Corporation. Fuel injection system and control valve for multi-cylinder engines. 4,331,119, Cl. 123-458.000.

Chamberlin, Thomas A.; and Tomalia, Donald A., to Dow Chemical Co., The. Vinyl substituted cyclic polyethers and addition polymers thereof. 4,331,785, Cl. 525-367.000.

Champion International Corporation: *See—*
Benham, Albert A., 4,331,290, Cl. 229-72.000.
Boyle, Daniel J., 4,331,231, Cl. 206-45.250.
Brundage, David J., 4,331,235, Cl. 206-423.000.

Chandler, Eugene J. Model of the human knee suitable for teaching operative arthroscopy. 4,331,428, Cl. 434-274.000.

Chang, Paul: *See—*
Mayer, Edward F.; Diamond, Arthur S.; and Chang, Paul, 4,331,756, Cl. 430-108.000.

Chantler, Shireen M.; and Edgar, William, to Burroughs Wellcome Co. Immune complex assay. 4,331,649, Cl. 424-12.000.

Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., to General Motors Corporation. Enhanced oxide whisker growth on peeled Al-containing stainless steel foil. 4,331,631, Cl. 422-180.000.

Charlat, Patrice; Delmas, Bernard; and Mallen-Herrero, Jose, to Compagnie de Construction Mecanique Sulzer. Electrohydraulic rotary brake. 4,331,223, Cl. 188-294.000.

Chauvet, Pierre: *See—*
Berton, Yves; and Chauvet, Pierre, 4,331,551, Cl. 252-631.000.

Chelcun, Darrell N.; Dougherty, Roderick J., Jr.; Belau, Kenneth P.; and Old, Robert L., Jr., to MCC Powers. Characterizable distribution means in a supervisory and control system. 4,332,013, Cl. 364-505.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Hahn, Heinrich; and Kurandt, Hans-Friedrich, 4,331,465, Cl. 71-42.000.

Chenevas-Paule, Andre; Le Goascoz, Vincent; and Viktorovitch, Pierre, to Commissariat a l'Energie Atomique. Process for treating semiconductor devices under atomic hydrogen plasma. 4,331,486, Cl. 148-1.500.

Cheney, Lawrence W.: *See—*
Jones, Othel L.; and Cheney, Lawrence W., 4,331,421, Cl. 418-32.000.

Chevron Research Company: *See—*
Bose, Phillip R., 4,331,532, Cl. 208-11.0LE.
Kuehler, Christopher W., 4,331,531, Cl. 208-10.000.
Liston, Thomas V.; and Erdman, Timothy R., 4,331,222, Cl. 188-264.00B.

Cheylus, Jean-Francois, to Poclain Hydraulics. Pressurized fluid mechanism such as a hydraulic engine. 4,331,064, Cl. 92-58.000.

Childs, W. Ves; and Coyner, Herbert N., to Phillips Petroleum Company. Octane number measuring system. 4,331,024, Cl. 73-35.000.

Chiola, Vincent: *See—*
Fan, Albert K.; and Chiola, Vincent, 4,331,553, Cl. 252-301.360.

Chisholm, James R. Seal for compressed air line drain device. 4,331,268, Cl. 222-361.000.

Chisholm, Raymond S.; and Holmstrom, Bjorn, to Oronzio deNora Impianti Elettrochimici S.p.A. Novel electrolytic cell and method. 4,331,521, Cl. 204-98.000.

Chloe Chimie: *See—*
Arnal, Claude; Fischer, Nicolas; and Pompon, Jean-Bernard, 4,331,788, Cl. 526-91.000.

Chloride Group Limited: *See—*
Julian, Keith; and Irving, Raymond C., 4,331,747, Cl. 429-160.000.

Choe, Pil Y., to Man Bo, Inc. Bench-type mechanical light generating device. 4,332,006, Cl. 362-193.000.

Chomerics, Inc.: *See—*
Malinaric, Paul J.; and Squitieri, Vincent, 4,331,948, Cl. 338-21.000.

Christiansen, Robert G.; Bell, Malcolm R.; and Schane, Harry P., Jr., to Sterling Drug Inc. 4α,5α-Epoxy-3,20-dioxopregnane-2α,16α-dicarbonitrile and intermediates and process for preparation, method of use and compositions thereof. 4,331,663, Cl. 424-241.000.

Christiansen, Uwe, to Heraeus Quarzschmelze GmbH. Light-weight mirror. 4,331,383, Cl. 350-310.000.

Christman, Donald L.; and Kan, Peter T., to BASF Wyandotte Corporation. Carbamylbiuret-modified polyisocyanates. 4,331,809, Cl. 544-238.000.

Christman, Donald L.; and Kan, Peter T., to BASF Wyandotte Corporation. Carbamylbiuret-modified polyisocyanates. 4,331,810, Cl. 544-296.000.

Christopher Scientific Co., Inc.: *See—*
Brown, George J., 4,331,263, Cl. 222-63.000.

Chromaco, Inc.: *See—*
Smith, Sherrel C., 4,331,867, Cl. 250-231.00R.

Chrysler Corporation: *See—*
Chadwick, Alexander, 4,331,119, Cl. 123-458.000.

Chuang, Tung J.; Coburn, John W.; and Kay, Eric, to International Business Machines Corporation. Etching process with vibrationally excited SF_6. 4,331,504, Cl. 156-635.000.

Chubu Electric Power Co., Inc., The: *See—*
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Chugoku Electric Power Co., Inc., The: *See—*
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Chung, Daniel C.; Miller, William A.; and Baumgaertner, Eugene R., to Allied Corporation. Ethylene-chlorotrifluoroethylene copolymer foam. 4,331,619, Cl. 264-13.000.

Ciallella, John G.: *See—*
Gordon, Richard; and Ciallella, John G., 4,331,253, Cl. 220-200.000.

Cianci, William J., Jr.; and Pizzuti, Donato F., to Polaroid Corporation. Photographic apparatus with dual function sonic transducer. 4,331,409, Cl. 354-195.000.

Ciba-Geigy Corporation: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,331,682, Cl. 424-305.000.
Baylis, Eric K., 4,331,591, Cl. 260-112.50R.
Beffa, Fabio; and Back, Gerhard, 4,331,596, Cl. 260-145.00A.
Fletcher, Ian J., 4,331,805, Cl. 544-81.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,331,676, Cl. 424-270.000.

Claassen, George R.; and Ewing, John J., to PPG Industries, Inc. Glass sheet support of ring-like configuration. 4,331,464, Cl. 65-273.000.

Clarion Co., Ltd.: *See—*
Amazawa, Kiyoshi; Mori, Masaharu; and Taniyama, Takashi, 4,331,885, Cl. 307-254.000.

Clark Equipment Company: *See—*
Bauer, James J.; Wart, William M.; and Hansen, Howard C., 4,331,209, Cl. 180-54.00A.

Clark, Kenneth M., to Hughes Aircraft Company. Tool for optically finishing connector-mounted optical fibers. 4,330,965, Cl. 51-217.00R.

Clarke Products Co., Inc.: *See*—
Clarke, Stephen G., 4,331,104, Cl. 119-52.00R.
Clarke, Stephen G., to Clarke Products Co., Inc. Birdfeeder. 4,331,104, Cl. 119-52.00R.
Clayton Corporation: *See*—
Holman, William M., 4,331,269, Cl. 222-402.210.
Cleary, Patrick J. Roofing composition and structure. 4,331,726, Cl. 428-143.000.
Cleff, Herbert: *See*—
Hasemann, Werner; and Cleff, Herbert, 4,330,960, Cl. 49-404.000.
Clemente, Roberto: *See*—
Canavesi, Roberto; Ligorati, Ferdinando; Ghezzi, Roberto; and Clemente, Roberto, 4,331,567, Cl. 252-470.000.
Clemmer, Elmer R. Golf board game. 4,331,334, Cl. 273-245.000.
Clifford, David P., to Dow Chemical Company Limited, England. Fungicidal pyridyl arylureas, compositions containing them and method of controlling fungi and bacteria. 4,331,669, Cl. 424-263.000.
Cloutier, Joseph A. R.; and Edmonds, Anthony C. F., to C-I-L Inc. Explosive booster. 4,331,081, Cl. 102-318.000.
Coal Mining Research Centre, The: *See*—
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.
Coate, William C., to Lodge & Shipley Company, The. Automatic tool changer for a lathe. 4,330,928, Cl. 29-568.000.
Cobaugh, Robert F.: *See*—
Andrews, Howard W.; and Cobaugh, Robert F., 4,331,370, Cl. 339-17.00M.
Coburn, John W.: *See*—
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Cogswell, Ned W.; Eskin, Gerald J.; and Wright, W. Andrew, Jr., to Iri, Inc. Cable television with controlled signal substitution. 4,331,974, Cl. 358-86.000.
Cohen, Abraham B.; and Krawacki, Michael J., to Du Pont de Nemours, E. I., and Company. Process for applying dry particulate material to a tacky surface. 4,331,712, Cl. 427-202.000.
Cohen, Arnold H.: *See*—
Halewijn, Harry J.; and Cohen, Arnold H., 4,331,274, Cl. 226-15.000.
Cohn, William E.; and Nowaczyk, Philip J., to Zenith Radio Corporation. Portable television controller with electronic switching. 4,331,977, Cl. 358-188.000.
Colby, Daniel E., to McCord Corporation. Method useful for rotational molding articles where successful runs are of different colors. 4,331,626, Cl. 264-310.000.
Cole, Gerald S., to Ford Motor Company. Microwave core process. 4,331,197, Cl. 164-522.000.
Colgrove, Thomas V.: *See*—
Limm, Albert C.; O'Brien, James T.; Colgrove, Thomas V.; and Nyul, Paul, 4,331,938, Cl. 372-50.000.
Collins, Brian S. Radial engine. 4,331,108, Cl. 123-50.00R.
Colon, Herman; and Maletsky, Albert. Water-soluble, pressure-sensitive, hot-melt adhesives. 4,331,576, Cl. 524-271.000.
Columbia Gas System Service Corporation: *See*—
Hong, Charles C.; Price, David E.; and Morse, William F., 4,331,129, Cl. 126-427.000.
Columbus McKinnon Corporation: *See*—
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Commissariat a l'Energie Atomique: *See*—
Berton, Yves; and Chauvet, Pierre, 4,331,551, Cl. 252-631.000.
Chenevas-Paule, Andre; Le Goascoz, Vincent; and Viktorovitch, Pierre, 4,331,486, Cl. 148-1.500.
Delaage, Michel, 4,331,646, Cl. 424-1.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., 4,331,657, Cl. 424-88.000.
Compagnie de Construction Mecanique Sulzer: *See*—
Charlat, Patrice; Delmas, Bernard; and Mallen-Herrero, Jose, 4,331,223, Cl. 188-294.000.
Computerized Cutters Ltd.: *See*—
Gergek, Franc, 4,331,050, Cl. 83-71.000.
Congoleum Corporation: *See*—
Haemer, Laurence F., 4,331,579, Cl. 524-5.000.
Conners, John P., to Giddings & Lewis, Inc. Boolean logic processor without accumulator output feedback. 4,331,893, Cl. 307-465.000.
Consolidated Refining Co., Inc.: *See*—
Gordon, Richard; and Ciallella, John G., 4,331,253, Cl. 220-200.000.
Constructions De Clichy: *See*—
Favrot, Paul, 4,330,962, Cl. 51-5.00D.
Container Corporation of America: *See*—
Helms, Charles R., 4,331,256, Cl. 220-267.000.
Continental Group, Inc., The: *See*—
Banich, John N., Sr., 4,331,249, Cl. 215-343.000.
Rimdzius, Donald A., 4,332,015, Cl. 365-45.000.
Contreras, Robert A. Roller skate tote. 4,331,357, Cl. 294-145.000.
Conway, Harry E.; and Hughes, John W., to Westinghouse Electric Corp. Housing for electrical components. 4,331,830, Cl. 174-16.00R.
Cook, John P.: *See*—
Facha, Joseph V.; and Cook, John P., 4,331,512, Cl. 376-287.000.
Coombes, Alan: *See*—
Keller, John W., Jr.; Bursack, William E.; and Coombes, Alan, 4,331,157, Cl. 128-419.00R.
Cooper, John: *See*—
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Copal Company Limited: *See*—
Kawarada, Tsutomu; Yamada, Kimichika; Sango, Hiroshi; and Kiyokawa, Katsushige, 4,331,398, Cl. 353-113.000.
Cope, James R. Fish filletting knife. 4,330,937, Cl. 30-153.000.
Copeland Corporation: *See*—
Jones, Othel L., 4,331,420, Cl. 418-32.000.
Copley, George A., to Donaldson Company, Inc. Self-cleaning pulsed air cleaner. 4,331,459, Cl. 55-302.000.
Copperweld Corporation: *See*—
Fraser, Malcolm J., 4,331,283, Cl. 228-130.000.
Copreal S.A.: *See*—
Bonink, Johannes A., 4,330,970, Cl. 52-125.000.
Corbett, Scott S., Jr.: *See*—
Perrott, Lynn F., 4,331,419, Cl. 414-283.000.
Corning Glass Works: *See*—
Boyd, David C.; Lu, Kun-Er; and Tarcza, Walter H., 4,331,768, Cl. 501-18.000.
Danielson, Paul S; and Megles, John E., Jr., 4,331,769, Cl. 501-32.000.
Thompson, David A., 4,331,770, Cl. 501-62.000.
Coulter Systems Corporation: *See*—
Kuehnle, Manfred R., 4,331,526, Cl. 204-192.00R.
Courneya, Calice G., to Tillitt, Ralph S.; and Rutten, Ronald C. High efficiency material drying. 4,330,946, Cl. 34-1.000.
Coussot, Gerard; and Hartemann, Pierre, to Thomson-CSF. Sensor using two tunable oscillators connected to a frequency mixer comprising a device for calibrating the frequency of the output signal and a process for calibrating this frequency. 4,331,022, Cl. 73-4.00R.
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., to Commonwealth Scientific and Industrial Research Organization. Fecundity of domestic livestock. 4,331,657, Cl. 424-88.000.
Coyner, Herbert N.: *See*—
Childs, W. Ves; and Coyner, Herbert N., 4,331,024, Cl. 73-35.000.
Crabtree, Luther L.: *See*—
Campbell, David K.; and Crabtree, Luther L., 4,332,029, Cl. 371-22.000.
Crane, Jane L. Math educational apparatus. 4,331,424, Cl. 434-208.000.
Cretin, Jean-Loup, to Alsthom-Atlantique. Apparatus for selectively connecting and disconnecting two sets of three-phase busbars via isolating switch means. 4,331,847, Cl. 200-48.00R.
Cripe, Jerry D., to Siemens Corporation. Process for making an electrical component having a metallic casing with a conformable plastic coating. 4,330,929, Cl. 29-570.000.
Crisci, Joseph R.; De Nale, Robert; and Franke, Gene L., to United States of America, Navy. Alloy-cored titanium welding wire. 4,331,857, Cl. 219-137.0WM.
Cros, Pierre G., to Promecam Sisson-Lehmann. Dimension indicator for sheet-metal folding or shearing machine tools. 4,331,020, Cl. 72-461.000.
Cross, Michael E.; and Cross, Rodney A. Air film-expanded gas seals. 4,331,337, Cl. 277-1.000.
Cross, Peter S.; and Shreve, William R., to Hewlett-Packard Company. Acoustic wave devices having transverse mode distortions eliminated structurally. 4,331,943, Cl. 333-194.000.
Cross, Rodney A.: *See*—
Cross, Michael E.; and Cross, Rodney A., 4,331,337, Cl. 277-1.000.
Crossley, Roger, to John Wyeth & Brother Limited. Pyridinium salts. 4,331,673, Cl. 424-263.000.
Crucible Inc.: *See*—
Harris, Velvin E., 4,330,912, Cl. 29-130.000.
Culaud, Andre, to Ateliers des Charmilles S.A. Hydraulic system for feeding an action turbine. 4,331,173, Cl. 137-219.000.
Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., to Binks Manufacturing Company. Safety cover for rotary head electrostatic spray coating systems. 4,331,299, Cl. 239-691.000.
Cullinan, John R. Primary-secondary induction internal combustion engine. 4,331,118, Cl. 123-433.000.
Cummings, Kenneth W.: *See*—
Johnson, Randall K.; Cummings, Kenneth W.; and Perethian, Charles M., 4,331,358, Cl. 296-78.100.
Cummings, Willard, to Bendix Corporation, The. Method of making chuck assembly and collet. 4,330,923, Cl. 29-434.000.
Curtis, John S.; and Hurst, Albert, to Sedco Pipe Products, Inc. Electrical outlet box. 4,331,832, Cl. 174-57.000.
Czernik, Daniel E.; and Moerk, John C., Jr., to Felt Products Mfg. Co. Head gaskets and method of making same. 4,331,336, Cl. 277-1.000.
Dahlstrom, Bo; and Olsson, Sven G., to Siemens Aktiengesellschaft. Recording device. 4,331,963, Cl. 346-62.000.
Daisley, Robert T.: *See*—
Blackall, Victor G.; and Daisley, Robert T., 4,330,976, Cl. 53-151.000.
Dakin, Wayne R.: *See*—
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,332,022, Cl. 369-44.000.
D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Monomeric diimides having terminal conjugated diacetylene groups. 4,331,601, Cl. 548-461.000.
D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Co., executor); and Waitkus, Phillip A., to Plastics Engineering Company. Polymerization products of diimides having terminal diacetylene groups. 4,331,794, Cl. 526-262.000.

Damiano, Frank. Pneumatic Christmas tree display. 4,330,953, Cl. 40-407.000.

Dana Corporation: *See—*
Kadykowski, Frank, 4,330,966, Cl. 51-230.000.

D'Angelo, John A., to ACF Industries, Incorporated. Fire-safe valve structure. 4,331,172, Cl. 137-72.000.

Daniel, Chelliah; and Brusky, Phillis L., to Ashland Oil, Inc. Process for making esters of unsaturated acids. 4,331,813, Cl. 560-205.000.

Daniel, Donald B., to Lockheed Corporation. Adaptive hybrid antenna system. 4,332,032, Cl. 455-277.000.

Daniel Industries, Inc.: *See—*
Geisow, Bernard H., 4,331,315, Cl. 251-14.000.

Danielson, Paul S; and Megles, John E., Jr., to Corning Glass Works. Tinted spontaneous opal glass. 4,331,769, Cl. 501-32.000.

Dannatt, Hugh S. L., to Pitney Bowes Inc. Assembly tool. 4,330,916, Cl. 29-227.000.

D'Antonio, Nicholas F., to Wellman Thermal Systems Corporation. Control system and method of controlling ion nitriding apparatus. 4,331,856, Cl. 219-121.00P.

Darby, Ronald A. Device to reduce the acoustical radiation from empty cans and containers during handling and transport in canning and related operations. 4,331,214, Cl. 181-296.000.

Darby, Vene L.: *See—*
Schulz, David W.; and Darby, Vene L., 4,331,284, Cl. 228-157.000.

Dart Industries, Inc.: *See—*
Jennings, Thomas C.; and Fletcher, Charles W., Jr., 4,331,587, Cl. 524-181.000.

Dau, Donald E.; and Nelson, Leonard E., to Minnesota Mining and Manufacturing Company. Abrasive article. 4,331,453, Cl. 51-298.000.

Dauchot, Paul J.: *See—*
Appie, Howard P.; and Dauchot, Paul J., 4,331,156, Cl. 128-688.000.

Davis, C. Fred, Jr., to Babcock & Wilcox Company, The. Modular nuclear fuel assembly rack. 4,331,244, Cl. 211-194.000.

Davis, Charles M.: *See—*
Russell, Frederick L.; and Davis, Charles M., 4,331,136, Cl. 128-163.000.

Davis, Gary L. Bean machine. 4,330,957, Cl. 47-14.000.

Davis, James W., Jr. Golf score card and hole information guide. 4,331,425, Cl. 434-252.000.

Davis, Ross A. Windshield antenna. 4,331,961, Cl. 343-704.000.

Davison, Sol, to Shell Oil Company. Elastosol pastes. 4,331,581, Cl. 524-364.000.

Dawson, Edward C.; Homan, Jan D. H.; and Van Weemen, Bauke K., to Akzona Incorporated. Stabilization of peroxidase. 4,331,761, Cl. 435-188.000.

Day, William J., Jr.: *See—*
Seidel, Harry W.; and Day, William J., Jr., 4,331,124, Cl. 126-21.00A.

DBX, Inc.: *See—*
Adams, Robert W., 4,331,931, Cl. 330-278.000.

DCI Marketing: *See—*
Rabas, Kenneth J., 4,330,955, Cl. 40-489.000.

Dean, Raymond H., to Tempmaster Corporation. Pneumatic control circuit for air distribution systems. 4,331,291, Cl. 236-49.000.

Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W. Method and apparatus for cracking residual oils. 4,331,533, Cl. 208-113.000.

De'Ath, Norman J.; and Gillon, John, to FBC Limited. Carbamoyl pyrazole compounds and their pesticidal application. 4,331,678, Cl. 424-273.00P.

Deere & Company: *See—*
Shindelar, Joseph J., 4,330,985, Cl. 56-341.000.

Degen, Peter J., to Riverain Corporation. Cuffed tracheal tube. 4,331,142, Cl. 128-207.150.

Degesch GmbH: *See—*
Horn, Franziskus; and Fluck, Ekkehard, 4,331,642, Cl. 423-299.000.

Degussa Aktiengesellschaft: *See—*
Berger, Michael; and Koberstein, Edgar, 4,331,519, Cl. 204-72.000.

Dehue, Jozef J. E., to B.V. Interpower. Apparatus for recovering energy from a heating installation. 4,331,199, Cl. 165-39.000.

Delaage, Michel, to Commissariat a l'Energie Atomique. Iodine compound for use as a tracer in radioimmunology. 4,331,646, Cl. 424-1.000.

Deleens, Gerard E.: *See—*
Foy, Paul R.; Jungblut, Camille; and Deleens, Gerard E., 4,331,786, Cl. 525-408.000.

Delmas, Bernard: *See—*
Charlat, Patrice; Delmas, Bernard; and Mallen-Herrero, Jose, 4,331,223, Cl. 188-294.000.

del Pino, Fernando: *See—*
Eidenschink, Rudolf; Pohl, Ludwig; Romer, Michael; and del Pino, Fernando, 4,331,552, Cl. 252-299.600.

deMan, Heiko T.: *See—*
Berman, Stanley J.; Berman, Judith M.; and deMan, Heiko T., 4,331,251, Cl. 220-4.00B.

Demichelis, Francesca: *See—*
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.

Demit, Joel: *See—*
Torre, Jean-Paul; and Demit, Joel, 4,331,772, Cl. 501-97.000.

Demnianiuk, Eugene F., to Burroughs Corporation. Modular system with system carrier, test carrier and system connector. 4,331,373, Cl. 339-91.00R.

Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,331,605, Cl. 549-314.000.

De Nale, Robert: *See—*
Crisci, Joseph R.; De Nale, Robert; and Franke, Gene L., 4,331,857, Cl. 219-137.0WM.

Denk, Viktor. Apparatus for heating liquids, in particular foodstuffs and luxury foodstuffs, for the purpose of pasteurization, sterilization and the like. 4,331,070, Cl. 99-483.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Ukita, Kenkichi; Nakano, Tatsuo; and Kishi, Ikuji, 4,331,795, Cl. 526-273.000.

Denner, Peter; Ernst, Egon; and Jockel, Alfred, to Balcke-Durr Aktiengesellschaft. Apparatus for pulling transverse fins onto a plurality of pipes. 4,330,934, Cl. 29-726.000.

Dennison Manufacturing Company: *See—*
Bourque, Donald L., 4,331,276, Cl. 227-8.000.

Dentsply Research and Development Corp.: *See—*
Gonser, Donald L., 4,331,149, Cl. 128-303.140.

de Ridder, Jan: *See—*
de Vrijer, Bertus; Eijkelenboom, Leonard C. H.; and de Ridder, Jan, 4,331,901, Cl. 313-315.000.

De Roo, Pierre R.: *See—*
Gilliams, Yvan K.; and De Roo, Pierre R., 4,331,755, Cl. 430-106.000.

DeSoto, Inc.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., 4,331,719, Cl. 427-393.500.

Deuterium Corporation: *See—*
Spevack, Jerome S., 4,331,513, Cl. 202-158.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Adaptive accompaniment level in an electronic musical instrument. 4,331,058, Cl. 84-1.210.

de Vrijer, Bertus; Eijkelenboom, Leonard C. H.; and de Ridder, Jan, to U.S. Philips Corporation. Electric incandescent lamp. 4,331,901, Cl. 313-315.000.

Dey, Arabinda N.; and Bowden, William L., to Duracell International Inc. Method for increasing recycling life of non-aqueous cells. 4,331,743, Cl. 429-50.000.

Diamond, Arthur S.: *See—*
Mayer, Edward F.; Diamond, Arthur S.; and Chang, Paul, 4,331,756, Cl. 430-108.000.

Diamond Shamrock Corporation: *See—*
Beer, Henri B.; and Hinden, Jean M., 4,331,528, Cl. 204-290.00F.
Huba, Francis; and Zorska, Roman, 4,331,525, Cl. 204-181.00F.

Didier-Werke A.G.: *See—*
Langenfeld, Wilhelm; and Brihay, Jacques, 4,331,471, Cl. 75-59.000.

Diefendorf, Russell J.; and Riggs, Dennis M., to Exxon Research & Engineering Co. Process for producing carbon fibers from heat treated pitch. 4,331,620, Cl. 264-29.200.

Dietz, Richard E.: *See—*
Rohlfing, Raymond G.; Welch, Melvin B.; and Dietz, Richard E., 4,331,791, Cl. 526-125.000.
Welch, Melvin B.; and Dietz, Richard E., 4,331,558, Cl. 252-429.00B.

Dillmann, Hans G.; Furrer, Jurgen; and Pasler, Horst, to Kernforschungszentrum Karlsruhe GmbH. Mist collector for separating drops of liquid from streams of gas for vapor. 4,331,460, Cl. 55-485.000.

Dinsmore, Harold L.: *See—*
Schwartz, Robert E.; Dinsmore, Harold L.; Peters, Donald J.; and Long, Gary W., 4,331,456, Cl. 55-26.000.

Director-General of the Agency of Industrial Science and Technology: *See—*
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.

Discovision Associates: *See—*
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,332,022, Cl. 369-44.000.

Dittman, Donald C.; Kendrick, Paul W.; and Thibodeaux, Leon J. Automatic start/stop apparatus for cyclical engine operation. 4,331,880, Cl. 290-38.00R.

Diversified Electronics, Inc.: *See—*
Voss, Earl, 4,331,995, Cl. 361-85.000.

Djurickovic, Slobodan M., to Pennwalt Corporation. Treatment of otitis externa in dogs with beta-(1-adamantyl)-alpha,alpha-dimethylethylamine. 4,331,686, Cl. 424-325.000.

Doering, Paul K.: *See—*
Edick, John D.; and Doering, Paul K., 4,331,895, Cl. 310-61.000.

Doi, Yoshinao; Fujii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for manufacturing a microporous film having low electrical resistance and high durability. 4,331,622, Cl. 264-45.300.

Dolin, Russell: *See—*
Kessinger, Charles; and Dolin, Russell, 4,331,411, Cl. 408-97.000.

Doll, Eugene N., to Market Innovators, Inc. Gravity flow rack. 4,331,243, Cl. 211-49.00D.

Domer, Wolfgang; and Klepper, Helmut, to BBC Brown, Boveri & Company Limited. Combined thrust and support bearing for turbogenerators. 4,331,366, Cl. 308-22.000.

Dominguez, Ramon; and Anderson, Jack R., to Solarex Corporation. Method of making a solar panel. 4,331,492, Cl. 156-66.000.

Dommer, Hans-Martin: *See*—
Bergmann, Ewald; and Dommer, Hans-Martin, 4,331,049, Cl. 83-71.000.
Donaldson Company, Inc.: *See*—
Copley, George A., 4,331,459, Cl. 55-302.000.
Donnel, Roscoe J.: *See*—
McCrobie, George L.; Rees, James D.; and Donnel, Roscoe J., 4,331,388, Cl. 350-419.000.
Dorma-Baubeschlag GmbH & Co. KG.: *See*—
Hasemann, Werner; and Cleff, Herbert, 4,330,960, Cl. 49-404.000.
Doroshow, James H.: *See*—
Myers, Charles E., Jr.; Doroshow, James H.; and Locker, Gershon Y., 4,331,648, Cl. 424-10.000.
Dorpmund, Heinz: *See*—
Piech, Ferdinand; Dorpmund, Heinz; Oberpichler, Gerd; Honig, Ernst-August; and Schmidt, Dieter, 4,331,045, Cl. 74-867.000.
Dorr, Manfred; Haase, Georg; and Uibel, Paul-Ulrich, to Vorwerk & Co. Interholding GmbH. Vacuum cleaner with filling-condition indicator. 4,330,900, Cl. 15-339.000.
Dorr-Oliver Incorporated: *See*—
Roberts, Elliot J., 4,331,507, Cl. 162-29.000.
Dotson, Dale A. Educational time teaching device. 4,331,427, Cl. 434-304.000.
Dougherty, Roderick J., Jr.: *See*—
Chelcun, Darrell N.; Dougherty, Roderick J., Jr.; Belau, Kenneth P.; and Old, Robert L., Jr., 4,332,013, Cl. 364-505.000.
Dow Chemical Company, The: *See*—
Bremmer, Bart J., 4,331,549, Cl. 252-77.000.
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,331,785, Cl. 525-367.000.
Fairchok, William J.; and Stanley, Frederick W., Jr., 4,331,787, Cl. 523-324.000.
Park, Chung P., 4,331,779, Cl. 521-134.000.
Renga, James M.; and Periana-Pillai, Roy A., 4,331,604, Cl. 549-230.000.
Skach, Edward J., Jr.; and Neipert, Marshall P., 4,331,711, Cl. 427-180.000.
Werner, John A.; Wilson, Charles A.; and Mixan, Craig E., 4,331,811, Cl. 546-345.000.
Williams, Michael L., 4,331,468, Cl. 71-121.000.
Dow Chemical Company Limited, England: *See*—
Clifford, David P., 4,331,669, Cl. 424-263.000.
Doyle, John B., to Keeton Sons & Co. Ltd. Folding machine. 4,331,018, Cl. 72-389.000.
Drabek, Jozef: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,331,682, Cl. 424-305.000.
Draber, Wilfried: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,331,675, Cl. 424-269.000.
Drake, Charles A., to Phillips Petroleum Company. Regeneration of ruthenium-containing catalyst. 4,331,557, Cl. 252-411.00R.
Drake, Charles A., to Phillips Petroleum Company. Catalyst for the hydrogenation of olefinically unsaturated compounds. 4,331,562, Cl. 252-438.000.
Draper, Edward F.; and Bentley, Paul E., to EPA Energy Products, Inc. Synthetic coal log. 4,331,446, Cl. 44-24.000.
Dresser Industries, Inc.: *See*—
Richardson, Victor E., 4,330,967, Cl. 51-268.000.
Drevici, Noe: *See*—
Drevici, Ulla; and Drevici, Noe, 4,331,692, Cl. 426-310.000.
Drevici, Ulla; and Drevici, Noe. Cocoa fruits and products. 4,331,692, Cl. 426-310.000.
Drexler, Ernst, to AKUTEC Angewandte Kunststoff-technik GmbH. Mast base for a wind surf-board. 4,331,094, Cl. 114-90.000.
Driscoll, John. Sleeping and meditation bag. 4,330,889, Cl. 2-69.500.
Duchateau, Jacques; and Nicolas, Maurice, to BFG Glassgroup. Solar panel and method of manufacturing a solar panel. 4,331,494, Cl. 156-87.000.
Dukane Corporation: *See*—
Jewison, Charles B.; and Buck, Brian E., 4,331,397, Cl. 353-71.000.
Duncan, Gail F.; Browning, Emerson F.; and Rotterman, Karl, to Tri-Made Products, Inc. Caulking tube plunger and enclosure assembly. 4,331,267, Cl. 222-153.000.
Duncan, James S.; and Pines, Michael Y., to Hughes Aircraft Co. DC Restore circuit for charge coupled devices. 4,331,874, Cl. 250-347.000.
Dunch, Poul, to Basta Laasefabrik A/S. Speedometer for cycles and mopeds. 4,331,918, Cl. 324-174.000.
Dunn, Wendell E., Jr., to Reynolds Metals Company. Process for purifying aluminum chloride. 4,331,637, Cl. 423-135.000.
Dunn, Wendell E., Jr., to Reynolds Metals Company. Alumina from alkali metal-aluminum chloride complexes. 4,331,645, Cl. 423-625.000.
Du Pont de Nemours, E. I., and Company: *See*—
Cohen, Abraham B.; and Krawacki, Michael J., 4,331,712, Cl. 427-202.000.
Hartig, Martval J., 4,331,378, Cl. 350-96.230.
McCall, Robert, 4,331,819, Cl. 568-939.000.
Smiley, Robert A., 4,331,812, Cl. 560-191.000.
Tyran, Leo W., 4,331,714, Cl. 427-216.000.
Duracell International Inc.: *See*—
Dey, Arabinda N.; and Bowden, William L., 4,331,743, Cl. 429-50.000.
Durance, Inc.: *See*—
King, Lloyd H., Sr., 4,331,174, Cl. 137-268.000.
Du Vall, Zell, to TSI Incorporated. Fluid flow measuring apparatus. 4,331,037, Cl. 73-861.090.
Dvorsky, Drahomir; and Cerovsky, Karel, to Vyzkumny ustav zuslechtovaci. Method of dyeing cellulose fibers by anionic dyes, compound for use in such method, and method of making the compound. 4,331,441, Cl. 8-542.000.
Dworak, Ulf; and Olapinski, Hans, to Feldmuhle Aktiengesellschaft. Cutting tip for metal-removing processing. 4,331,048, Cl. 82-1.00C.
Dynamit Nobel Aktiengesellschaft: *See*—
Bajohr, Walter; and Wuckel, Hildebert, 4,331,079, Cl. 102-202.120.
Habbel, Wolfgang; Prior, Josef; Schulte, Hans; and Voges, Christoph, 4,331,078, Cl. 102-202.110.
Dzurkovich, Damon. Seal extracting tool. 4,330,917, Cl. 29-235.000.
E.N.I. Ente Nazionale Idrocarburi: *See*—
Giannini, Ivo; and Baroncelli, Vittorio, 4,331,759, Cl. 435-4.000.
E. R. Squibb & Sons, Inc.: *See*—
Haugwitz, Rudiger D., 4,331,806, Cl. 544-140.000.
Eastman Kodak Company: *See*—
Brownstein, Scott A.; and Schauffele, Carl N., 4,331,400, Cl. 354-33.000.
Isaacson, Henry V.; Wright, Beth G.; and Wright, Hal E., 4,331,751, Cl. 430-18.000.
Ebbinghaus, Walter; Weisbrodt, Norbert; Optenhovel, Bernd; and Wennel, Heinz, to Webster, Ebbinghaus & Co. (WECO). Terminal, preferably for mounting on circuit boards of printed circuits. 4,331,377, Cl. 339-272.00A.
Eck, Leonard F., to Kansas Jack, Inc. Vehicle frame and body alignment apparatus. 4,330,945, Cl. 33-288.000.
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Methods for the treatment of viral infections. 4,331,662, Cl. 424-180.000.
Edell, Morton, to Hazel Bishop Industries Inc. Secure display clip. 4,331,237, Cl. 206-461.000.
Edgar, William: *See*—
Chantler, Shireen M.; and Edgar, William, 4,331,649, Cl. 424-12.000.
Edick, John D.; and Doering, Paul K., to Reliance Electric Company. Ducted rotor and lamination with deep radial passageway. 4,331,895, Cl. 310-61.000.
Edmonds, Anthony C. F.: *See*—
Cloutier, Joseph A. R.; and Edmonds, Anthony C. F., 4,331,081, Cl. 102-318.000.
Eduard Hueck, Firma: *See*—
Bischlipp, Klaus; and Pfeiffer, Jurgen, 4,330,919, Cl. 29-418.000.
Edwards, John V.: *See*—
Steer, Peter L.; and Edwards, John V., 4,331,148, Cl. 128-283.000.
Edwin Cooper, Inc.: *See*—
Papay, Andrew G.; and O'Brien, Joseph P., 4,331,545, Cl. 252-49.600.
Efthimion, Philip C.: *See*—
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.
Efuti Giken Co., Ltd.: *See*—
Kawai, Tsutomu, 4,331,988, Cl. 360-96.600.
Eidenschink, Rudolf; Pohl, Ludwig; Romer, Michael; and del Pino, Fernando, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystalline, partially hydrogenated oligo-1,4-phenylenes and dielectrics and electro-optical display elements containing them. 4,331,552, Cl. 252-299.600.
Eijkelenboom, Leonard C. H.: *See*—
de Vrijer, Bertus; Eijkelenboom, Leonard C. H.; and de Ridder, Jan, 4,331,901, Cl. 313-315.000.
Eisai Co., Ltd.: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.
Eisele, Walter H.; Krueger, Helmut H. A.; Lajos, Robert E.; and Koneval, Donald J., to Gould Inc. Geometric balance adjustment of thin film strain gage sensors. 4,331,035, Cl. 73-765.000.
Eisler, Gyula, to Mta Kozponti Fizikai Kutato Intezete. Optomechanical system built-up of basic elements for moving optical elements with a number of degrees of freedom. 4,331,384, Cl. 350-321.000.
El Paso Polyolefins Company: *See*—
Zurkoff, Bernard; and Lucas, Bennie M., 4,331,623, Cl. 264-141.000.
Electric Power Research Institute, Inc.: *See*—
Facha, Joseph V.; and Cook, John P., 4,331,512, Cl. 376-287.000.
Hingorani, Narain G., 4,331,882, Cl. 307-129.000.
Eli Lilly and Company: *See*—
Hamill, Robert L.; and Hoehn, Marvin M., 4,331,594, Cl. 260-112.50R.
Hamill, Robert L.; and Hoehn, Marvin M., 4,331,658, Cl. 424-121.000.
Ludwig, Nelson H.; and Boisvenue, Rudolph J., 4,331,652, Cl. 424-19.000.
Morris, Robert M., 4,331,654, Cl. 424-38.000.
Elliott, Kenneth D.; and Elliott, Peter F. Pulse rate multiplying circuitry. 4,331,924, Cl. 328-38.000.
Elliott, Peter F.: *See*—
Elliott, Kenneth D.; and Elliott, Peter F., 4,331,924, Cl. 328-38.000.

Elliott, Richard M.; Provanzano, Salvatore R.; and Sprague, Gordon V., Jr., to USM Corporation. Automatic roughing machine. 4,331,011, Cl. 69-6.500.

Elliott, Richard P., to British Gas Corporation. Coal gasification plant slag tapping process. 4,331,450, Cl. 48-210.000.

Elms, Robert T.: *See—*
Engel, Joseph C.; Elms, Robert T.; Mercier, Bernard J.; and Matsko, Joseph J., 4,331,997, Cl. 361-93.000.
Engel, Joseph C.; Wafer, John A.; Elms, Robert T.; and Saletta, Gary F., 4,331,999, Cl. 361-94.000.

Eltra Corporation: *See—*
Hansen, Walter I., 4,331,955, Cl. 340-728.000.
Meighan, Richard M., 4,331,516, Cl. 204-2.100.

Eltreva AG: *See—*
Schmidlin, Hans, 4,331,066, Cl. 98-96.000.

E+M Lamort S.A.: *See—*
Barnscheidt, Wolfgang, 4,331,534, Cl. 209-164.000.

Emerson, Reginald S., to Leslie Hartridge Limited. Precision flowmeter. 4,331,033, Cl. 73-243.000.

Emery Industries, Inc.: *See—*
Harris, Eugene G., 4,331,603, Cl. 549-228.000.

Emmons, William D.; and Feely, Wayne E., to Rohm and Haas Company. Hydrocurable ambient curing polyepoxide coating and adhesive compositions and method of using them. 4,331,793, Cl. 526-260.000.

Emrie, Robert E., to Enviroquip, Inc. Underdrain unit with air/water backwash for granular filtration system. 4,331,542, Cl. 210-794.000.

Enander, Bengt; Fuks, Peter; and Larsson, Gunnar. Transponder for use in locating avalanche victims. 4,331,957, Cl. 343-6.80R.

Enever, James A.: *See—*
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,331,490, Cl. 149-46.000.

Engel, Joseph C.; Elms, Robert T.; Mercier, Bernard J.; and Matsko, Joseph J., to Westinghouse Electric Corp. Circuit interrupter with digital trip unit and potentiometers for parameter entry. 4,331,997, Cl. 361-93.000.

Engel, Joseph C.; Wafer, John A.; Elms, Robert T.; and Saletta, Gary F., to Westinghouse Electric Corp. Circuit interrupter with digital trip unit and power supply. 4,331,999, Cl. 361-94.000.

Engel, Joseph C.: *See—*
Matsko, Joseph J.; Lange, Emroy W.; Engel, Joseph C.; and Mercier, Bernard J., 4,331,998, Cl. 361-93.000.

Engelsmann, Dieter: *See—*
Winkler, Alfred; Engelsmann, Dieter; Schroder, Rolf; and Maas, Dieter, 4,331,407, Cl. 354-187.000.

English, Cecil. Saw sharpening machine. 4,331,047, Cl. 76-41.000.

Enviroquip, Inc.: *See—*
Emrie, Robert E., 4,331,542, Cl. 210-794.000.

EPA Energy Products, Inc.: *See—*
Draper, Edward F.; and Bentley, Paul E., 4,331,446, Cl. 44-24.000.

Epina, August P.; Sellke, Richard G.; and Lunka, Harold A., to Storage Technology Corporation. Magnetic tape device. 4,331,306, Cl. 242-182.000.

Epstein, Richard A.; and Zannini, Henry A., to Cambridge Telecommunications, Inc. Data processing arrangement including multiple groups of I/O devices with priority between groups and within each group. 4,332,011, Cl. 364-200.000.

Erdman, Timothy R.: *See—*
Liston, Thomas V.; and Erdman, Timothy R., 4,331,222, Cl. 188-264.00B.

Erhardt & Leimer KG: *See—*
Peschke, Jurgen; Mair, Franz; and Zerle, Ludwig, 4,330,909, Cl. 26-75.000.

Erickson, Frederick L.: *See—*
Putman, Stephen; and Erickson, Frederick L., 4,330,895, Cl. 441-22.000.

Ernest, Ivan: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,331,676, Cl. 424-270.000.

Ernst, Egon: *See—*
Denner, Peter; Ernst, Egon; and Jockel, Alfred, 4,330,934, Cl. 29-726.000.

Eschenbach, Paul W., to Milliken Research Corporation. Method of forming a slub yarn. 4,330,988, Cl. 57-6.000.

ESCO Corporation: *See—*
Oettinger, John F., 4,331,509, Cl. 162-251.000.

Eskin, Gerald J.; Baron, Penny H.; and Malec, John, to Iri, Inc. Panelist response scanning system. 4,331,973, Cl. 358-84.000.

Eskin, Gerald J.: *See—*
Cogswell, Ned W.; Eskin, Gerald J.; and Wright, W. Andrew, Jr., 4,331,974, Cl. 358-86.000.

Espy, Ronald H., to Armco Inc. Ferritic stainless steel having toughness and weldability. 4,331,474, Cl. 75-124.000.

Esser, Gunther: *See—*
Schafer, Wolfgang; Radisch, Helmer; Fuchs, Reinhold; and Esser, Gunther, 4,331,736, Cl. 428-425.600.

Estes, Ronald L. Transom saver. 4,331 431, Cl. 440-53.000.

Etablissements Huret & Fils: *See—*
Marius, Huret R. H., 4,331,433, Cl. 474-79.000.

Etkes, Asher B.: *See—*
Carren, Thomas G.; and Etkes, Asher B., 4,331,252, Cl. 220-5.00A.

European Atomic Energy Commission (EURATOM): *See—*
Pierini, Giancarlo, 4,331,522, Cl. 204-129.000.

Euteco Impianti S.p.A.: *See—*
Canavesi, Roberto; Ligorati, Ferdinando; Ghezzi, Roberto; and Clemente, Roberto, 4,331,567, Cl. 252-470.000.
Ligorati, Ferinando; Invernizzi, Renzo; and Catenacci, Roberto, 4,331,790, Cl. 526-119.000.

Euteneuer, Charles L.; and Willenbring, Armer J., to Pako Corporation. Slide mounter with slide separator/out-of-slide inhibitor. 4,331,260, Cl. 221-19.000.

Evans, Anthony C.; and Rinker, Kurt H., to Kelsey-Hayes Co. Caliper disc brake guide and retention means. 4,331,221, Cl. 188-73.440.

Evans, Edwin R.; and Florence, Jerry D., to General Electric Company. Flame-retardant polyolefin compositions, their method of preparation and insulated electrical conductors manufactured therewith. 4,331,733, Cl. 428-379.000.

Everett, George S., to Quaker Oats Company, The. Catalysts for foundry core binders. 4,331,583, Cl. 523-144.000.

Ewing, John J.: *See—*
Claassen, George R.; and Ewing, John J., 4,331,464, Cl. 65-273.000.

Exxon Research & Engineering Co.: *See—*
Bryan, T. James; Burton, Jack D.; and Tyrrell, F. Peter, 4,331,984, Cl. 358-275.000.
Burton, Jack D.; and Fisher, Stephen D., 4,331,983, Cl. 358-257.000.
Diefendorf, Russell J.; and Riggs, Dennis M., 4,331,620, Cl. 264-29.200.
Lambert, Merlan M.; and Matula, Joseph P., 4,331,529, Cl. 208-8.00R.
Muruska, H. Paul; Sansregret Joseph L.; and Young, Archie R., 4,331,707, Cl. 427-74.000.

Facha, Joseph V.; and Cook, John P., to Electric Power Research Institute, Inc. Nuclear reactor guard vessel arrangement. 4,331,512, Cl. 376-287.000.

Faggin, Federico: *See—*
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,332,008, Cl. 364-200.000.

Fairbank, Fred S.: *See—*
Blevins, Gerald G.; Fairbank, Fred S.; Hixson, Wayne E.; and Knowlton, Reginald F., 4,331,953, Cl. 340-539.000.

Fairchild Camera and Instrument Corporation: *See—*
Causey, Donald R.; and Fredericks, Owen, 4,331,452, Cl. 51-5.00R.

Fairchok, William J.; and Stanley, Frederick W., Jr., to Dow Chemical Company, The. Continuous polymerization of water-miscible monomers. 4,331,787, Cl. 523-324.000.

Fan, Albert K.; and Chiola, Vincent, to GTE Products Corporation. Frit material for use with phosphor coating in fluorescent lamp. 4,331,553, Cl. 252-301.360.

Farmitalia Carlo Erba S.p.A.: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Scarafile, Cosimo; and Arcamone, Federico, 4,331,677, Cl. 424-270.000.
Nannini, Giuliano; Perrone, Ettore; Casabuona, Ferruccio; and Grasso, Silvio, 4,331,666, Cl. 424-246.000.

Farooq, Saleem: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,331,682, Cl. 424-305.000.

Farrar, David J.; Beck, Ralph W.; Preston, Edward G.; and Williams, Robert E., to Molins, Ltd. Ventilated cigarettes. 4,331,165, Cl. 131-281.000.

Fasig, Harold A., to Burroughs Corporation. Controller for a servo driven document feeder. 4,331,328, Cl. 271-270.000.

Favrot, Paul, to Constructions De Clichy. Assembly of grinding-wheels of grinding machines. 4,330,962, Cl. 51-5.00D.

Fazakerly, William B.: *See—*
Lazar, Janos J.; and Fazakerly, William B., 4,331,369, Cl. 312-334.000.

FBC Limited: *See—*
De'Ath, Norman J.; and Gillon, John, 4,331,678, Cl. 424-273.00P.

Feely, Wayne E.: *See—*
Emmons, William D.; and Feely, Wayne E., 4,331,793, Cl. 526-260.000.

Fegan, Richard: *See—*
Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., 4,330,899, Cl. 15-326.000.

Feldman, Martin L.; and Landau, Marvin, to Tenneco Chemicals, Inc. Drier systems and surface-coating compositions containing same. 4,331,575, Cl. 106-264.000.

Feldmuhle Aktiengesellschaft: *See—*
Barnscheidt, Wolfgang, 4,331,534, Cl. 209-164.000.
Dworak, Ulf; and Olapinski, Hans, 4,331,048, Cl. 82-1.00C.

Feldmuhle Anlagen-und Produktionsgesellschaft mbH: *See—*
Ziegler, Johannes, 4,331,628, Cl. 264-553.000.

Felix, Willy, to Jos. Hunkeler AG, Fabrik Fuer Graphische Maschinen. Apparatus for destacking at least two stacks of flexible flat structures, especially sheets or printed products. 4,331,327, Cl. 271-9.000.

Fellberg, Michael, to General Motors Corporation. Engine piston assembly with improved oil control. 4,331,065, Cl. 92-158.000.

Felt Products Mfg. Co.: *See—*
Czernik, Daniel E.; and Moerk, John C., Jr., 4,331,336, Cl. 277-1.000.

Ferranti Limited: *See—*
Leather, Russell A., 4,331,376, Cl. 339-258.00R.

Ferrari, Giancarlo: *See—*
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.

Ferro Corporation: *See—*
Kammann, Karl P., Jr.; and Phillips, Astrid-Ilsaabe, 4,331,564, Cl. 252-45.000.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 4,331,313, Cl. 248-394.000.

Fielden, John S., to South Eastern Electricity Board. Detection of tampering of kilowatt-hour meters for measuring electrical energy consumption. 4,331,915, Cl. 324-110.000.
Fillus, Gary C.: *See—*
Baran, Michael S.; Fillus, Gary C.; and Long, Eric L., 4,331,852, Cl. 200-306.000.
Financial Mining-Industrial & Shipping Corporation: *See—*
Svoronos, Jason, 4,331,636, Cl. 423-126.000.
First Champaign Corporation: *See—*
Johnson, Randall K.; Cummings, Kenneth W.; and Perethian, Charles M., 4,331,358, Cl. 296-78.100.
Vetter, Craig W., 4,331,344, Cl. 280-270.000.
Fischer, Nicolas: *See—*
Arnal, Claude; Fischer, Nicolas; and Pompon, Jean-Bernard, 4,331,788, Cl. 526-91.000.
Fischer, Peter Axel: *See—*
Henk, Peter O.; Piontkowski, Ziemowit A. A., deceased; and Carlsen, Christian G., administrator, 4,331,744, Cl. 429-59.000.
Fisher, Stephen D.: *See—*
Burton, Jack D.; and Fisher, Stephen D., 4,331,983, Cl. 358-257.000.
Fitch, Robert E.; and Tyer, Robert C., to Boeing Company, The. Fuel feed technique for auger combustor. 4,331,084, Cl. 110-186.000.
Fitch, Robert E.; and Tucker, Gordon H., to Boeing Company, The. Hot gas recycle for starved-air combustor. 4,331,086, Cl. 110-204.000.
Fitch, Robert E.: *See—*
Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., 4,331,085, Cl. 110-203.000.
Fleisch, William F.; and Pousche, Walter. Easy-to-assemble structure. 4,330,974, Cl. 52-486.000.
Fleming, James W., Jr.; MacChesney, John B.; and O'Connor, Paul B., to Bell Telephone Laboratories, Incorporated. Optical fiber fabrication by a plasma generator. 4,331,462, Cl. 65-3.120.
Fletcher, Charles W., Jr.: *See—*
Jennings, Thomas C.; and Fletcher, Charles W., Jr., 4,331,587, Cl. 524-181.000.
Fletcher, Ian J., to Ciba-Geigy Corporation. V-Triazolyl-[4,5-d]-pyrimidines. 4,331,805, Cl. 544-81.000.
Flora, Laurence P.; and Wiener, Daniel P., to Burroughs Corporation. BCD-to-Binary converter. 4,331,951, Cl. 340-347.0DD.
Florence, Jerry D.: *See—*
Evans, Edwin R.; and Florence, Jerry D., 4,331,733, Cl. 428-379.000.
Fluck, Ekkehard: *See—*
Horn, Franziskus; and Fluck, Ekkehard, 4,331,642, Cl. 423-299.000.
Flutec Fluidtechnische Gerate GmbH: *See—*
Klauck, Manfred, 4,331,537, Cl. 210-416.100.
Flynn, Kevin D.: *See—*
Galvin, Aaron A.; and Flynn, Kevin D., 4,331,952, Cl. 340-508.000.
FMC Corporation: *See—*
Landregan, Robert J.; and Kaleta, Gary S., 4,331,083, Cl. 105-406.00R.
Lathrop, Robert L., Jr., 4,331,633, Cl. 422-302.000.
Focke & Co.: *See—*
Focke, Heinz, 4,330,977, Cl. 53-379.000.
Focke, Heinz, to Focke & Co. Apparatus for the heat-sealing of pack wrappers and the like. 4,330,977, Cl. 53-379.000.
Foglio, Maurizio; Franceschi, Giovanni; Scarafile, Cosimo; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. 7-Oxo-4-1-aza-bicyclo-[3,2,0]-heptane derivatives. 4,331,677, Cl. 424-270.000.
Ford Motor Company: *See—*
Bookout, Charles C.; and Stockton, Thomas R., 4,331,044, Cl. 74-688.000.
Cole, Gerald S., 4,331,197, Cl. 164-522.000.
Hetrick, Robert E., 4,332,003, Cl. 361-433.000.
Leonard, Allan S.; and Burcz, Lawrence D., 4,331,046, Cl. 74-867.000.
Foster, Billy R. Endotracheal tube holder. 4,331,143, Cl. 128-207.170.
Foster, Terry L.: *See—*
Brewer, John H.; and Foster, Terry L., 4,331,650, Cl. 424-12.000.
Fournier, George J. Cup cover. 4,331,255, Cl. 220-259.000.
Foy, Paul R.; Jungblut, Camille; and Deleens, Gerard E., to ATO Chimie. Moldable and/or extrudable polyether-ester-amide block copolymers. 4,331,786, Cl. 525-408.000.
Franceschi, Giovanni: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Scarafile, Cosimo; and Arcamone, Federico, 4,331,677, Cl. 424-270.000.
Frandsen, Jorgen, to Burroughs Corporation. Flat coil linear actuator for multiple transducer arms. 4,331,990, Cl. 360-106.000.
Frangatos, Gerassimos, to Mobil Oil Corporation. Lubricant composition containing phosphite-diarylamine-carbonyl compound reaction product. 4,331,546, Cl. 252-49.900.
Franke, Gene L.: *See—*
Crisci, Joseph R.; De Nale, Robert; and Franke, Gene L., 4,331,857, Cl. 219-137.0WM.
Frankila, John W.; and Kremer, Robert M., to Allied Corporation. Seat belt anchor. 4,331,350, Cl. 280-801.000.
Fraser, Malcolm J., to Copperweld Corporation. Metal cladding. 4,331,283, Cl. 228-130.000.
Fredericks, Owen: *See—*
Causey, Donald R.; and Fredericks, Owen, 4,331,452, Cl. 51-5.00R.
Frederickson, Robert C. A.: *See—*
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,331,593, Cl. 260-112.50E.
Freedman, David: *See—*
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Freitag, Dieter: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; Reinking, Klaus; Rohr, Harry; and Block, Hans-Dieter, 4,331,614, Cl. 260-930.000.
Frey, Gunter: *See—*
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, 4,331,760, Cl. 435-19.000.
Friedrich, Karlheinz: *See—*
Risch, Lothar; Pammer, Erich; and Friedrich, Karlheinz, 4,331,709, Cl. 427-94.000.
Friesel, Clifford L.: *See—*
Bullinger, Henry W.; and Friesel, Clifford L., 4,330,933, Cl. 29-612.000.
Fritz Eichenauer GmbH & Co. KG: *See—*
Roller, Hanno; Nauerth, Karl-Heinz; and Kitt, Rudi, 4,331,860, Cl. 219-544.000.
Fritz Gegauf AG Bernina-Nachmaschinenfabrik: *See—*
Widmer, Hans, 4,331,089, Cl. 112-121.110.
Frohberger, Paul-Ernst: *See—*
Kramer, Wolfgang; Stetter, Jorg; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,331,674, Cl. 424-269.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,331,675, Cl. 424-269.000.
Fuchs, Rainer: *See—*
Schubart, Rudiger; Klauke, Erich; Naumann, Klaus; and Fuchs, Rainer, 4,331,821, Cl. 570-196.000.
Fuchs, Reinhold: *See—*
Schafer, Wolfgang; Radisch, Helmer; Fuchs, Reinhold; and Esser, Gunther, 4,331,736, Cl. 428-425.600.
Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo, 4,331,725, Cl. 428-138.000.
Kato, Toshihiro; and Tsunekawa, Yuzo, 4,330,925, Cl. 29-464.000.
Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, 4,331,444, Cl. 23-230.00B.
Toyama, Tadao, 4,331,479, Cl. 430-147.000.
Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,331,401, Cl. 354-37.000.
Fuji Seiki Machine Works, Ltd.: *See—*
Kobayashi, Shigeharu; Takagi, Toshiyuki; and Hayashi, Chiaki, 4,330,968, Cl. 51-425.000.
Fujii, Etsuo: *See—*
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,330,995, Cl. 60-562.000.
Fujii, Hiromu: *See—*
Ohashi, Tetsuro; Okamoto, Masafumi; and Fujii, Hiromu, 4,331,196, Cl. 164-468.000.
Fujii, Osamu: *See—*
Doi, Yoshinao; Fujii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,331,622, Cl. 264-45.300.
Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.
Fujino, Junichi; Miyazaki, Hideto; and Ikehata, Shigeki, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube apparatus. 4,331,906, Cl. 315-368.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Nakajima, Takao; Terada, Masafumi; and Mori, Tohru, 4,331,767, Cl. 435-288.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,331,664, Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,331,665, Cl. 424-246.000.
Fujitsu Fanuc Limited: *See—*
Kohzai, Yoshinori; Komiya, Hidetsugu; Amemiya, Yoichi; Ikebe, Yo; and Ikebe, Jun, 4,331,910, Cl. 318-618.000.
Fujitsu Limited: *See—*
Nozaki, Takao; and Ito, Takashi, 4,331,710, Cl. 427-94.000.
Fukatsu, Shunzo: *See—*
Makabe, Osamu; Murai, Yasushi; Okonogi, Tuneo; Onodera, Masahiro; Yoshida, Takashi; and Fukatsu, Shunzo, 4,331,597, Cl. 260-239.100.
Fuks, Peter: *See—*
Enander, Bengt; Fuks, Peter; and Larsson, Gunnar, 4,331,957, Cl. 343-6.80R.
Fukuda, Toshiro: *See—*
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.
Fukushima, Kyuji, to Kabushiki Kaisha Hatsuyume Wata Sohonpo. Mattress and bedclothes, or pillow. 4,330,892, Cl. 5-437.000.
Funahashi, Jun, to Nissan Motor Company, Limited. Structure for mounting a safety belt arrangement onto an automotive vehicle. 4,331,349, Cl. 280-801.000.
Funai Electric Co., Ltd.: *See—*
Kawai, Tsutomu, 4,331,988, Cl. 360-96.600.
Furrer, Jurgen: *See—*
Dillmann, Hans G.; Furrer, Jurgen; and Pasler, Horst, 4,331,460, Cl. 55-485.000.
Furuta, Kenzi, to Olympus Optical Co., Ltd. Early tape end alarm for a multispeed tape recorder. 4,331,307, Cl. 242-186.000.
Furuta, Kenzi; and Kondo, Makoto, to Olympus Optical Co., Ltd. Back spacing apparatus for a transcribing machine. 4,331,308, Cl. 242-191.000.

Gaines, John W.: *See—*
Kolthoff, C. Paul; Horsch, Joachim; and Gaines, John W., 4,331,208, Cl. 180-6.200.

Galarowic, Lawrence A., to Visi-Trol Engineering Company. Roller conveyor system. 4,331,228, Cl. 198-341.000.

Galloway, Terry R., to United States of America, Energy. Catalytic cartridge SO_3 decomposer. 4,331,632, Cl. 422-206.000.

Galvin, Aaron A.; and Flynn, Kevin D., to American District Telegraph Company. Redundant sensor adapter. 4,331,952, Cl. 340-508.000.

Ganz, Manfred; Gueldner, Enrique; and Burgermeister, Dieter, to Siemens Corporation. Modular telecommunication system. 4,331,834, Cl. 178-3.000.

Garrett Corporation, The: *See—*
Graves, Richard F., 4,331,352, Cl. 285-226.000.

Garvey, R. Michael: *See—*
Allan, David W.; and Garvey, R. Michael, 4,331,933, Cl. 331-3.000.

Gasseling, Allen J. Method and apparatus for controllably breaking caked bed of drying hops. 4,330,948, Cl. 34-181.000.

Gat, Arnon. Method for heat treating semiconductor material using high intensity CW lamps. 4,331,485, Cl. 148-1.500.

Gatzen, Hans-Heinrich: *See—*
Schachl, Rudolf; and Gatzen, Hans-Heinrich, 4,330,910, Cl. 29-90.00R.

Gazonnet, Jean-Pierre, to Rhone-Poulenc Industries. Polyamide masterbatches. 4,331,776, Cl. 521-91.000.

Gebhardt, Karl. Climate-controlled building. 4,331,128, Cl. 126-417.000.

Gebruder Weiss K.G.: *See—*
Holighaus, Armin, 4,331,126, Cl. 126-163.00R.

Gebrueder Buehler AG: *See—*
Muller, Roman, 4,331,072, Cl. 99-606.000.

Gebrueder Frei GmbH & Co.: *See—*
Kurner, Heinrich; and Keinath, Manfred, 4,331,008, Cl. 66-163.000.

Geisow, Bernard H., to Daniel Industries, Inc. Actuatable safety valve for wells and flowlines. 4,331,315, Cl. 251-14.000.

General Battery Corporation: *See—*
Urban, Todd A.; and Oxenreider, Terry R., 4,331,325, Cl. 269-43.000.

General Electric Company: *See—*
Baliga, B. Jayant, 4,331,969, Cl. 357-43.000.
Evans, Edwin R.; and Florence, Jerry D., 4,331,733, Cl. 428-379.000.
Hicks, William R.; and Madan, Bhim S., 4,331,300, Cl. 241-282.100.
Holub, Fred F.; and Mellinger, Gary A., 4,331,799, Cl. 528-185.000.
Huber, Paul G., 4,331,914, Cl. 323-324.000.
Kushner, Gerald J.; and Raleigh, Edward, 4,330,924, Cl. 29-458.000.
Ladusaw, William T., 4,331,002, Cl. 62-505.000.
Owen, Daniel V., 4,331,905, Cl. 315-225.000.
Scannell, Edward F.; and Schultz, William J., 4,331,916, Cl. 324-151.00R.
West, Martin M.; and Zavitsanos, Peter D., 4,331,080, Cl. 102-301.000.
Yerman, Alexander J., 4,331,970, Cl. 357-72.000.

General Instrument Corp.: *See—*
Morley, Richard M.; Multani, Jagir S.; and Sandhu, J. S., 4,330,930, Cl. 29-571.000.

General Motors Corporation: *See—*
Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,331,631, Cl. 422-180.000.
Fellberg, Michael, 4,331,065, Cl. 92-158.000.
Jones, Joe W., 4,331,001, Cl. 62-503.000.
Schaefer, Carl F.; and Bedford, Raymond E., 4,331,565, Cl. 252-462.000.

General Signal Corporation: *See—*
Jandrasi, Frank J., 4,331,316, Cl. 251-86.000.

General Tire & Rubber Company, The: *See—*
Kuan, Tiong H., 4,331,738, Cl. 428-494.000.
Shanoski, Henry, 4,331,735, Cl. 428-423.700.

George, John M.: *See—*
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., 4,331,657, Cl. 424-88.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, H. Joseph; and Rich, Leonard G., 4,331,051, Cl. 83-74.000.

Gerber, H. Joseph; and Rich, Leonard G., to Gerber Garment Technology, Inc. Apparatus for cutting sheet material with variable gain closed loop. 4,331,051, Cl. 83-74.000.

Gergek, Franc, to Computerized Cutters Ltd. Control for paper cutting apparatus. 4,331,050, Cl. 83-71.000.

Gerhold, Mark L. C.: *See—*
Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., 4,332,027, Cl. 370-94.000.

Gersbeck, Rolf; and Krohn, Manfred, to Hermann Berstorff Maschinenbau GmbH. Method of making an endless belt for continuously hot pressing a web of material. 4,331,500, Cl. 156-307.700.

Gersl, Bozislav, to Adamovske strojirny, narodni podnik. Photoelectric device for sensing the height of a pile of paper sheets. 4,331,879, Cl. 250-561.000.

Gerson, I. Steve, to Mostek Corporation. Memory protection system. 4,332,009, Cl. 364-200.000.

Gerst, Carl W., Jr.; and Hair, Hugh A., to Anaren Microwave, Incorporated. Automatic tracking methods and apparatus. 4,331,960, Cl. 343-117.00R.

Geschwind, Gary I., to Raychem Corporation. Sealing cover for an hermetically sealed container. 4,331,258, Cl. 220-359.000.

Ghezzi, Roberto: *See—*
Canavesi, Roberto; Ligorati, Ferdinando; Ghezzi, Roberto; and Clemente, Roberto, 4,331,567, Cl. 252-470.000.

Giannini, Ivo; and Baroncelli, Vittorio, to E.N.I. Ente Nazionale Idrocarburi. Composition suitable for testing biological tissues and/or liquids, and the method of use. 4,331,759, Cl. 435-4.000.

Gibbs, Charles G., to Gulf Oil Corporation. Novel thioureidoiminoisoindolinone and use as plant growth regulator. 4,331,467, Cl. 71-96.000.

Gibson, Duane M., to Omark Industries, Inc. Method and apparatus for determining the sharpness of a saw chain. 4,331,028, Cl. 73-104.000.

Gibstein, Edward; and Nortman, Jeffrey, to JEDCO Products Limited, Inc. Utility light. 4,332,007, Cl. 362-200.000.

Giddings & Lewis, Inc.: *See—*
Conners, John P., 4,331,893, Cl. 307-465.000.

Gilad, Yigal, to Irritech, Advanced Irrigation Technologies. Spray or atomizing nozzle. 4,331,294, Cl. 239-222.170.

Gilbert, Earl F., to Westvaco Corporation. Shipping container for appliances. 4,331,234, Cl. 206-320.000.

Giles, Albert H.: *See—*
Mirra, Michael J.; and Giles, Albert H., 4,331,487, Cl. 148-6.15R.

Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., to Boots Company, The. Pesticidal compounds, compositions and methods. 4,331,680, Cl. 424-303.000.

Gilliams, Yvan K.; and De Roo, Pierre R., to Agfa-Gevaert N.V. Toner composition for electrostatic image development. 4,331,755, Cl. 430-106.000.

Gillon, John: *See—*
De'Ath, Norman J.; and Gillon, John, 4,331,678, Cl. 424-273.00P.

Gilman, John J.; and Saunders, Ralph R., to Allied Corporation. Composite shell. 4,331,497, Cl. 156-195.000.

Gilster, Daniel D.; and Kaupan, Randall T. Device for breaking the foretoes of sheep carcasses. 4,330,902, Cl. 17-1.00R.

Ginsburgh, Irwin, to Standard Oil Company (Indiana). System and method for controlling engine knock. 4,331,117, Cl. 123-425.000.

Giovanni Marchisio & C. S.a.s.: *See—*
Marchisio, Giovanni, 4,331,007, Cl. 66-55.000.

Gipson, Wyllie T. Water spray attachment for concrete finishing machine. 4,331,297, Cl. 239-289.000.

Girard, Edouard. Antitheft device for spectacles exhibited for selling purposes. 4,331,394, Cl. 351-158.000.

Girard, Pierre; and Richard, Michel, to Centre Technique de l'Industrie des Papiers, Cartons et Celluloses. Process and apparatus for the continuous coating of a sheet article, particularly a web of paper or paperboard. 4,331,713, Cl. 427-209.000.

Girard, Yves, to Merck Sharp & Dohme (I.A.) Corp. (3-Aralkylamino-2-or-propoxy) heterocyclic compounds. 4,331,679, Cl. 424-283.000.

Girola, Umberto, to Theodor Hymmen KG., Firma. Pressure application apparatus. 4,331,073, Cl. 100-154.000.

Glasrock Products, Inc.: *See—*
Armstrong, Lee C., 4,331,147, Cl. 128-276.000.

Gleichechagen, Peter; and Klaass, Gunter, to Beiersdorf AG. Process for the production of adhesive-repellent coatings. 4,331,718, Cl. 427-391.000.

Goddard, Denis A.; and Wallis, Robert L., to Beloit Corporation. Paper making machine foil having low disturbance profile and self-sharpening tip. 4,331,511, Cl. 162-352.000.

Godrich, Jonathan E.; and Towers, David M. Method and apparatus for testing the rain resistance of fabrics and garments or other articles made therefrom. 4,331,031, Cl. 73-159.000.

Goetzinger, Charles E.: *See—*
Ruesch, James R.; and Goetzinger, Charles E., 4,331,912, Cl. 323-271.000.

Gold, Louis. Management of chemical toxic wastes. 4,331,088, Cl. 110-346.000.

Golden, Theodore A. Hemorrhoid bandage. 4,331,151, Cl. 128-401.000.

Goldenberg, Milton D. Tumor localization and therapy with labeled antibody fragments specific to tumor-associated markers. 4,331,647, Cl. 424-1.000.

Goldstein, Gideon: *See—*
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,331,595, Cl. 260-112.50R.

Golec, Frederick A., Jr.; and Auerbach, Joseph, to USV Pharmaceutical Corporation. Intermediates for the synthesis of phthalimidines. 4,331,600, Cl. 548-472.000.

Gonser, Donald L., to Dentsply Research and Development Corp. Electrosurgical device. 4,331,149, Cl. 128-303.140.

Gordon, Richard; and Ciallella, John G., to Consolidated Refining Co., Inc. Lid assembly for hermetic sealing of a semiconductor chip. 4,331,253, Cl. 220-200.000.

Gordon, Scott: *See—*
Barrett, Harrison H.; Swindell, William; Gordon, Scott; and Greivenkamp, John E., Jr., 4,331,877, Cl. 250-445.00T.

Goretta, Louis A.; and Otremba, Robert R., to Nalco Chemical Company. Continuous process for production of copolymer of an alkali metal vinyl sulfonate and acrylic acid. 4,331,792, Cl. 526-229.000.

Gosney, William M., Jr.; and McKenny, Vernon G., to Mostek Corporation. Three layer floating gate memory transistor with erase gate over field oxide region. 4,331,968, Cl. 357-23.000.

Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba-Geigy Corporation. Thia-aza compounds with a β-lactam ring. 4,331,676, Cl. 424-270.000.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,331,665, Cl. 424-246.000.
Goto, Masao: *See—*
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.
Gottwals, David F., to Hewlett-Packard Company. Method for fabricating a magnetic shielding enclosure. 4,331,285, Cl. 228-173.00C.
Gould Inc.: *See—*
Eisele, Walter H.; Krueger, Helmut H. A.; Lajos, Robert E.; and Koneval, Donald J., 4,331,035, Cl. 73-765.000.
Gozdziewicz, Zygmunt: *See—*
Wojciechowski, Jerzy; Haber, Jerzy; Gozdziewicz, Zygmunt; and Lange, Edward, 4,331,693, Cl. 426-419.000.
Graf, Michael C., to Brooks & Perkins, Incorporated. Retractable pallet securing device. 4,331,412, Cl. 410-69.000.
Graff, Henry W., to Pathfinder Auto Lamp Company. Wide-angle mirror for automobiles and the like. 4,331,382, Cl. 350-303.000.
Granatstein, Victor L.: *See—*
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.
Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,331,550, Cl. 252-174.110.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,331,570, Cl. 252-522.00R.
Grant, Richard A.: *See—*
Shanton, Kenneth J.; and Grant, Richard A., 4,331,634, Cl. 423-22.000.
Grasso, Silvio: *See—*
Nannini, Giuliano; Perrone, Ettore; Casabuona, Ferruccio; and Grasso, Silvio, 4,331,666, Cl. 424-246.000.
Graves, Richard F., to Garrett Corporation, The. Heat exchanger support system providing for thermal isolation and growth. 4,331,352, Cl. 285-226.000.
Gray, Tommy L., to Span Instruments, Inc. Regulator/valve controller. 4,331,179, Cl. 137-627.500.
Green, David Y., to United States Surgical Corporation. Self-contained gas powered surgical stapler. 4,331,277, Cl. 227-19.000.
Gregorian, Roubik; and Suzuki, Toshiro, to American Microsystems, Inc. Switched-capacitor interolation filter. 4,331,894, Cl. 307-520.000.
Greivenkamp, John E., Jr.: *See—*
Barrett, Harrison H.; Swindell, William; Gordon, Scott; and Greivenkamp, John E., Jr., 4,331,877, Cl. 250-445.00T.
Grenco S.p.A.: *See—*
Vitaloni, Alberto, 4,331,883, Cl. 307-150.000.
Grosso, Harry. Double boiler and steam cooker. 4,331,127, Cl. 126-377.000.
Groth, Willis G., to H. A. Phillips & Co. Wheel construction and arrangement. 4,331,343, Cl. 280-80.00R.
Grove, John L.; Merz, Ernest J.; and Walters, Charles W., to JLG Industries, Inc. Controls for aerial lift platform apparatus. 4,331,215, Cl. 182-2.000.
Gsell, Laurenz: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,331,682, Cl. 424-305.000.
GTE Automatic Electric Laboratories, Inc.: *See—*
Lee, Man S., 4,331,944, Cl. 333-213.000.
GTE Automatic Electric Labs Inc.: *See—*
Tarr, Lloyd A.; Taylor, John P.; and Young, John S., 4,331,843, Cl. 179-175.20R.
GTE Laboratories Incorporated: *See—*
Briere, Alfred D.; and Klein, Richard M., 4,331,463, Cl. 65-13.000.
GTE Products Corporation: *See—*
Fan, Albert K.; and Chiola, Vincent, 4,331,553, Cl. 252-301.360.
Gueldner, Enrique; and Major, James M., to Siemens Corporation. Interface unit for a modular telecommunication system. 4,331,835, Cl. 178-3.000.
Gueldner, Enrique: *See—*
Ganz, Manfred; Gueldner, Enrique; and Burgermeister, Dieter, 4,331,834, Cl. 178-3.000.
Gulf Oil Corporation: *See—*
Cahoy, Roger P., 4,331,815, Cl. 564-142.000.
Gibbs, Charles G., 4,331,467, Cl. 71-96.000.
Gulf Research & Development Company: *See—*
Pretzer, Wayne R.; and Pannell, Richard B., 4,331,560, Cl. 252-429.00R.
Gulf States Paper Corporation: *See—*
Hanko, Jimmy J.; and Gulliver, Richard F., 4,331,238, Cl. 206-518.000.
Gulf & Western Manufacturing Company: *See—*
Miller, Stanley J.; Jensen, James W.; and Heniser, Richard J., 4,331,014, Cl. 72-93.000.
Trudeau, William H.; and Smith, Joseph E., 4,331,367, Cl. 308-26.000.
Gulliver, Richard F.: *See—*
Hanko, Jimmy J.; and Gulliver, Richard F., 4,331,238, Cl. 206-518.000.
Guthlein, Werner: *See—*
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, 4,331,760, Cl. 435-19.000.
Gutman, Arnold D.; and Williams, John W., to Stauffer Chemical Company. Biocides for protection of polymeric materials. 4,331,480, Cl. 106-18.330.
Gutman, Arnold D., to Stauffer Chemical Company. Method for controlling algae. 4,331,681, Cl. 424-304.000.
Gutsch, Uwe: *See—*
Brandes, Siegfried; Gutsch, Uwe; Leithner, Dietrich; and Presser, Wolfgang, 4,332,030, Cl. 376-226.000.
H. A. Phillips & Co.: *See—*
Groth, Willis G., 4,331,343, Cl. 280-80.00R.
H. G. Weber & Co., Inc.: *See—*
Blatz, Glenroy G.; and Petersen, Burdette A., 4,331,415, Cl. 414-52.000.
Haas, Peter: *See—*
Sommerfeld, Claus-Dieter; Haas, Peter; Wagner, Kuno; and Kapps, Manfred, 4,331,778, Cl. 521-129.000.
Haase, Georg: *See—*
Dorr, Manfred; Haase, Georg; and Uibel, Paul-Ulrich, 4,330,900, Cl. 15-339.000.
Haase, Thomas A.: *See—*
Pesa, Frederick A.; and Haase, Thomas A., 4,331,612, Cl. 260-465.400.
Habbel, Wolfgang; Prior, Josef; Schulte, Hans; and Voges, Christoph, to Dynamit Nobel Aktiengesellschaft. Instantaneous detonator with insert member within fuze casing. 4,331,078, Cl. 102-202.110.
Haber, Jerzy: *See—*
Wojciechowski, Jerzy; Haber, Jerzy; Gozdziewicz, Zygmunt; and Lange, Edward, 4,331,693, Cl. 426-419.000.
Hadley, Michael S., to Beecham Group Limited. Aniline analeptics. 4,331,816, Cl. 564-164.000.
Haemer, Laurence F., to Congoleum Corporation. Adhesive to adhere impervious and felt backed vinyl sheet material to damp concrete. 4,331,579, Cl. 524-5.000.
Haga, Takahiro: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.
Haggerty, John, to Butterworth Systems Inc. Sealing arrangement. 4,331,254, Cl. 220-229.000.
Hahn, Heinrich; and Kurandt, Hans-Friedrich, to Chemische Werke Huls Aktiengesellschaft. Process for the production of NPK fertilizers resistant to smoldering decomposition at elevated temperatures. 4,331,465, Cl. 71-42.000.
Hair, Hugh A.: *See—*
Gerst, Carl W., Jr.; and Hair, Hugh A., 4,331,960, Cl. 343-117.00R.
Hale, Robert W., to Philip Morris, Incorporated. Cigarette. 4,331,166, Cl. 131-331.000.
Halewijn, Harry J.; and Cohen, Arnold H., to Itek Corporation. Tracking system. 4,331,274, Cl. 226-15.000.
Haley, Ernest K. Measuring linear displacement of an object. 4,330,941, Cl. 33-141.00F.
Hall, Dale R., to B.F. Goodrich Company, The. Stabilization of post-chlorinated vinyl chloride polymers by phosphate salts. 4,331,775, Cl. 521-85.000.
Hall, George E.; and Carr, Jack, to Roseman Mower Corporation. Towable ganged mower. 4,330,981, Cl. 56-7.000.
Hallas, Robert: *See—*
Tadanier, John S.; Hallas, Robert; and Martin, Jerry R., 4,331,804, Cl. 424-180.000.
Hallsey, Brian. Shuttle valve. 4,331,140, Cl. 128-204.260.
Hamada, Minoru; Sakurai, Hisaya; Masamoto, Jyunzo; Yoshida, Takeo; and Hazawa, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preventing color migration in colored moldings of polyoxymethylene resins. 4,331,439, Cl. 8-442.000.
Hamaoka, Hiromi: *See—*
Oda, Yasutaka; and Hamaoka, Hiromi, 4,331,987, Cl. 360-78.000.
Hamill, Robert L.; and Hoehn, Marvin M., to Eli Lilly and Company. A-21978 Antibiotics and process for their production. 4,331,594, Cl. 260-112.50R.
Hamill, Robert L.; and Hoehn, Marvin M., to Eli Lilly and Company. Method of treating swine dysentery with antibiotic A-32887. 4,331,658, Cl. 424-121.000.
Hamm, Robert A., to Boeing Company, The. Advanced composite. 4,331,723, Cl. 428-61.000.
Hanamura, Takeo: *See—*
Doi, Yoshinao; Fujii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,331,622, Cl. 264-45.300.
Handley, Edward W.; and Stewart, Robert C., to Handley Industries, Inc. Curb box for plastic valve. 4,331,178, Cl. 137-556.300.
Handley Industries, Inc.: *See—*
Handley, Edward W.; and Stewart, Robert C., 4,331,178, Cl. 137-556.300.
Haneda, Hisao: *See—*
Kawamura, Tomozuchi; Haneda, Hisao; and Araoka, Mamoru, 4,331,105, Cl. 122-406.00S.
Hanko, Jimmy J.; and Gulliver, Richard F., to Gulf States Paper Corporation. Fast food containing and serving device. 4,331,238, Cl. 206-518.000.
Hanna, Russell, to Union Carbide Corporation. Latex polymerization process. 4,331,577, Cl. 524-819.000.
Hansen, Howard C.: *See—*
Bauer, James J.; Wart, William M.; and Hansen, Howard C., 4,331,209, Cl. 180-54.00A.
Hansen, Walter I., to Eltra Corporation. Method and apparatus for smoothing outlines. 4,331,955, Cl. 340-728.000.
Hanyu, Susumu; Tonomura, Yoshinobu; Takenoya, Hideaki; and Hara, Masanori, to Janome Sewing Machine Co., Ltd. Bobbin thread tensioning device for a sewing machine. 4,331,090, Cl. 112-229.000.

Hara, Masanori: *See*—
Hanyu, Susumu; Tonomura, Yoshinobu; Takenoya, Hideaki; and Hara, Masanori, 4,331,090, Cl. 112-229.000.
Harada, Masahide: *See*—
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.
Hardigg Industries, Inc.: *See*—
Hardigg, James S.; and Turner, Edward W., 4,331,748, Cl. 429-175.000.
Hardigg, James S.; and Turner, Edward W., to Hardigg Industries, Inc. Sliding seal battery cover. 4,331,748, Cl. 429-175.000.
Hardy, William B., to American Cyanamid Company. Novel light stabilizers for polymers. 4,331,586, Cl. 525-186.000.
Harnischfeger Corporation: *See*—
Klebe, Herbert F., 4,331,418, Cl. 414-277.000.
Harper, David A. C.: *See*—
Brake, Arthur L.; and Harper, David A. C., 4,331,175, Cl. 137-322.000.
Harris Corporation: *See*—
Campbell, David K.; and Crabtree, Luther L., 4,332,029, Cl. 371-22.000.
Harris, Eugene G., to Emery Industries, Inc. Process for improving the fragrance properties of macrocyclic compounds obtained by thermal depolymerization. 4,331,603, Cl. 549-228.000.
Harris, Velvin E., to Crucible Inc. Furnace roll. 4,330,912, Cl. 29-130.000.
Hartemann, Pierre: *See*—
Coussot, Gerard; and Hartemann, Pierre, 4,331,022, Cl. 73-4.00R.
Hartig, Martval J., to Du Pont de Nemours, E. I., and Company. Reinforced optical fiber cable with glass or silica core. 4,331,378, Cl. 350-96.230.
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, to Takeda Chemical Industries, Ltd. Maytansinoids. 4,331,598, Cl. 260-239.30P.
Hasemann, Werner; and Cleff, Herbert, to Dorma-Baubeschlag GmbH & Co. KG. Closing arrangement for sliding doors and the like. 4,330,960, Cl. 49-404.000.
Hass, Robert H.; and Albertson, Walter, to Union Oil Company of California. Process for removing SO_x and NO_x compounds from gas streams. 4,331,639, Cl. 423-235.000.
Hassun, Rolly: *See*—
Kovalick, Al; and Hassun, Rolly, 4,331,941, Cl. 332-31.00R.
Hatakeyama, Yoshiharu, to Yoshida Industry Co., Ltd. Vanity case. 4,331,168, Cl. 132-79.00G.
Hattori, Tadashi: *See*—
Nishida, Minoru; Hattori, Tadashi; and Tanaka, Akira, 4,331,899, Cl. 313-141.000.
Hattori, Toshio: *See*—
Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, 4,331,897, Cl. 310-234.000.
Hauer, James E. Visualizer display device. 4,330,951, Cl. 40-124.200.
Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Dithioacyldihydropyrazole carboxylic acid derivatives. 4,331,806, Cl. 544-140.000.
Hawley, Gil R., to Phillips Petroleum Company. Polymerization using a selenium or tellurium treated catalyst. 4,331,789, Cl. 526-96.000.
Hayashi, Chiaki: *See*—
Kobayashi, Shigeharu; Takagi, Toshiyuki; and Hayashi, Chiaki, 4,330,968, Cl. 51-425.000.
Hayden, Robert K. Method of opening metal beverage containers. 4,330,894, Cl. 7-152.000.
Haynes, Russell R.: *See*—
Broadwater, Ronald L.; Haynes, Russell R.; and Mitry, Samah A., 4,331,154, Cl. 128-677.000.
Haytayan, Harry M., to Pneutek, Inc. Assembly and method of attaching to ingot mold. 4,330,922, Cl. 29-432.000.
Hazawa, Hiroshi: *See*—
Hamada, Minoru; Sakurai, Hisaya; Masamoto, Jyunzo; Yoshida, Takeo; and Hazawa, Hiroshi, 4,331,439, Cl. 8-442.000.
Hazel Bishop Industries Inc.: *See*—
Edell, Morton, 4,331,237, Cl. 206-461.000.
Hazemeijer B.V.: *See*—
Lipperts, Joseph H. F. G., 4,331,850, Cl. 200-144.00B.
Healthdyne, Inc.: *See*—
Patel, Anilbhai S., 4,331,161, Cl. 128-736.000.
Healy, James W. Disposable EKG electrode. 4,331,153, Cl. 128-641.000.
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Immunoregulatory diketopiperazine compounds. 4,331,595, Cl. 260-112.50R.
Heberlein Maschinenfabrik AG: *See*—
Luthi, Walter, 4,331,000, Cl. 62-374.000.
Heidemeyer, Paulus; Zimmermann, Frank; and Scholz, Romanus, to Volkswagenwerk Aktiengesellschaft. Device for automatic actuation of an automobile clutch. 4,331,226, Cl. 192-0.076.
Heider, Rolf: *See*—
Schmieder, Heinrich; and Heider, Rolf, 4,330,989, Cl. 57-227.000.
Heidt, Marvin W., to Rockwell International Corporation. Referenced phase RF feedback linear amplifier. 4,331,928, Cl. 330-149.000.
Heimburger, Norbert: *See*—
Becker, Udo; Braun, Konrad; and Heimburger, Norbert, 4,331,766, Cl. 435-273.000.
Heinzel, Irving C.: *See*—
Brooks, William R.; and Heinzel, Irving C., 4,331,134, Cl. 128-90.000.
Heitz, Walter; and Ball, Peter, to Bayer Aktiengesellschaft. Process for the preparation of carbonic acid esters. 4,331,610, Cl. 260-463.000.
Helderman, Earl R.; and Zimmerman, Robert R., to Tektronix, Inc. Sputtering targets with low mobile ion contamination. 4,331,476, Cl. 75-214.000.
Helding, Curtis L.; and Larrabee, Carl R. Door push bar lock-out retainer. 4,331,354, Cl. 292-92.000.
Helms, Charles R., to Container Corporation of America. Lid dispensing arrangement. 4,331,256, Cl. 220-267.000.
Helwig, William F., Jr. Energy saving dishwashing method with heater control. 4,331,484, Cl. 134-18.000.
Hendricks, Udo-Winfried: *See*—
Uhlig, Heinrich; Langheinrich, Klaus; and Hendricks, Udo-Winfried, 4,331,442, Cl. 8-564.000.
Heniser, Richard J.: *See*—
Miller, Stanley J.; Jensen, James W.; and Heniser, Richard J., 4,331,014, Cl. 72-93.000.
Henk, Peter O.; Piontkowski, Ziemowit A. A., deceased; and by Carlsen, Christian G., administrator, to Fischer, Peter Axel, a part interest. Lead salt electric storage battery. 4,331,744, Cl. 429-59.000.
Henle, Ernst: *See*—
Kuttenbaum, Valentin; and Henle, Ernst, 4,331,436, Cl. 493-310.000.
Heraeus Quarzschmelze GmbH: *See*—
Christiansen, Uwe, 4,331,383, Cl. 350-310.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Gersbeck, Rolf; and Krohn, Manfred, 4,331,500, Cl. 156-307.700.
Hertel, Hasso: *See*—
Kostka, Rudolf; and Hertel, Hasso, 4,331,443, Cl. 8-671.000.
Hesse, Wolfgang, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Clamped connection. 4,331,201, Cl. 165-153.000.
Hetrick, Robert E., to Ford Motor Company. Electrochemical analog transistor structure with two spaced solid electrochemical cells. 4,332,003, Cl. 361-433.000.
Hewlett-Packard Company: *See*—
Cross, Peter S.; and Shreve, William R., 4,331,943, Cl. 333-194.000.
Gottwals, David F., 4,331,285, Cl. 228-173.00C.
Kovalick, Al; and Hassun, Rolly, 4,331,941, Cl. 332-31.00R.
Heyman, Joseph S., to United States of America, National Aeronautics and Space Administration. Acoustic tooth cleaner. 4,331,422, Cl. 433-125.000.
Hicks, William R.; and Madan, Bhim S., to General Electric Company. Rotary cutter blade. 4,331,300, Cl. 241-282.100.
Hieber, Konrad; and Mayer, Norbert, to Siemens Aktiengesellschaft. Method for reproducible manufacture of metallic layers. 4,331,702, Cl. 427-10.000.
Hiester, Kenneth R.: *See*—
Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., 4,330,899, Cl. 15-326.000.
Hill, John A.: *See*—
Lackman, Leslie M.; and Hill, John A., 4,331,495, Cl. 156-93.000.
Hiller, Dietrich: *See*—
Reul, Bernhard; and Hiller, Dietrich, 4,331,651, Cl. 424-19.000.
Hillmann, De Lloyd F. Crop divider assembly. 4,330,984, Cl. 56-314.000.
Hilzinger, Fritz: *See*—
Braun, Karl; Hilzinger, Fritz; and Wintermantel, Erich, 4,331,150, Cl. 128-334.00C.
Hinden, Jean M.: *See*—
Beer, Henri B.; and Hinden, Jean M., 4,331,528, Cl. 204-290.00F.
Hingorani, Narain G., to Electric Power Research Institute, Inc. Method and means for detecting spurious electrical signals in an electrical power system. 4,331,882, Cl. 307-129.000.
Hinnenkamp, James A.; and Walatka, Vernon V., Jr., to National Distillers & Chemical Corp. Synthetic crystalline metal silicate compositions and preparation thereof. 4,331,641, Cl. 423-277.000.
Hiraharu, Teruo: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Hiraharu, Teruo; and Yasukawa, Shiro, 4,331,784, Cl. 525-313.000.
Hirai, Seiichi; and Otsuka, Nobuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Constant velocity universal joint. 4,331,005, Cl. 464-145.000.
Hirai, Tadaaki: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha; Nippon Denso Kabushiki Kaisha; and Aisan Industry Co. Ltd. Device for controlling evaporative emission from an automobile. 4,331,120, Cl. 123-519.000.
Hirano, Shigeo: *See*—
Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, 4,331,444, Cl. 23-230.00B.
Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture camera. 4,331,395, Cl. 352-27.000.
Hiratsuka, Nobuo: *See*—
Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, 4,331,444, Cl. 23-230.00B.
Hirt, Alfred, to Man Maschinenfabrik Augsburg-Nurnburg A.G. Method for manufacturing an electron beam emission aperture. 4,331,505, Cl. 156-643.000.
Hisamatsu, Minoru: *See*—
Hoki, Tsuneo; and Hisamatsu, Minoru, 4,331,777, Cl. 521-94.000.
Hisatake, Michio; Kasuga, Noboru; and Sano, Yasuro, to Janome Sewing Machine Co., Ltd. Pattern cam positioning means in stopping device for sewing machines. 4,331,092, Cl. 112-275.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.
Hitachi, Ltd.: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,331,939, Cl. 372-92.000.
Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, 4,331,286, Cl. 228-198.000.
Mori, Masahito, 4,331,986, Cl. 360-71.000.
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.
Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, 4,331,897, Cl. 310-234.000.
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.
Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, 4,331,280, Cl. 228-112.000.
Terashima, Isamu; and Sunada, Masayoshi, 4,331,184, Cl. 141-94.000.
Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, 4,331,752, Cl. 430-28.000.
Hitco: *See*—
Babayan, Eduard P., 4,331,582, Cl. 523-453.000.
Parker, Leon; and Campman, Arthur R., 4,331,091, Cl. 112-262.100.
Hixson, Wayne E.: *See*—
Blevins, Gerald G.; Fairbank, Fred S.; Hixson, Wayne E.; and Knowlton, Reginald F., 4,331,953, Cl. 340-539.000.
Hobbs, John B.: *See*—
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, 4,331,662, Cl. 424-180.000.
Hochiki Corporation: *See*—
Yamauchi, Yukio, 4,331,888, Cl. 340-598.000.
Hochtemperatur-Reaktorbau GmbH: *See*—
Brandes, Siegfried; Gutsch, Uwe; Leithner, Dietrich; and Presser, Wolfgang, 4,332,030, Cl. 376-226.000.
Hodgman, Gary W.: *See*—
Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., 4,332,027, Cl. 370-94.000.
Hoechst Aktiengesellschaft: *See*—
Kostka, Rudolf; and Hertel, Hasso, 4,331,443, Cl. 8-671.000.
Reul, Bernhard; and Hiller, Dietrich, 4,331,651, Cl. 424-19.000.
Topfer, Dieter, 4,331,099, Cl. 118-413.000.
Wissmann, Hans; and Kleiner, Hans-Jerg, 4,331,592, Cl. 260-112.50R.
Zimmermann, Wolfgang; and Pospich, Gunther, 4,331,781, Cl. 525-61.000.
Hoehn, Marvin M.: *See*—
Hamill, Robert L.; and Hoehn, Marvin M., 4,331,594, Cl. 260-112.50R.
Hamill, Robert L.; and Hoehn, Marvin M., 4,331,658, Cl. 424-121.000.
Hoeksema, Herman; and Slechta, Libor, to Upjohn Company, The. Antibiotic U-62,162 and process of making. 4,331,659, Cl. 424-122.000.
Hoen, Cuyler, to Simmons Fastener Corporation. Quarter turn plug fastener. 4,331,413, Cl. 411-44.000.
Hoki, Tsuneo; and Hisamatsu, Minoru, to Asahi-Dow Limited. Foaming synthetic resin compositions stabilized with certain naphthyl amine compounds. 4,331,777, Cl. 521-94.000.
Holighaus, Armin, to Gebruder Weiss K.G. Furnace for solid fuels. 4,331,126, Cl. 126-163.00R.
Holman, William M., to Clayton Corporation. Nozzle adapter for tilt actuated nozzle down valves. 4,331,269, Cl. 222-402.210.
Holmstrom, Bjorn: *See*—
Chisholm, Raymond S.; and Holmstrom, Bjorn, 4,331,521, Cl. 204-98.000.
Holub, Fred F.; and Mellinger, Gary A., to General Electric Company. Copolymers of etherimides and amideimides. 4,331,799, Cl. 528-185.000.
Homan, Jan D. H.: *See*—
Dawson, Edward C.; Homan, Jan D. H.; and Van Weemen, Bauke K., 4,331,761, Cl. 435-188.000.
Hombach, Theodor; and Welp, Ewald G., to Jagenberg Werke AG. Rotary disk-cutter blade. 4,331,056, Cl. 83-666.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hirai, Seiichi; and Otsuka, Nobuyuki, 4,331,005, Cl. 464-145.000.
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,330,995, Cl. 60-562.000.
Sano, Shoichi, 4,331,224, Cl. 188-322.220.
Tsuboi, Masaharu, 4,331,212, Cl. 180-230.000.
Honda, Satoru: *See*—
Sunaga, Yoshimitsu; and Honda, Satoru, 4,331,909, Cl. 318-6.000.
Honeywell Inc.: *See*—
Severson, Asbjorn M.; and Volk, John A., 4,331,036, Cl. 73-861.050.
Hong, Charles C.; Price, David E.; and Morse, William F., to Columbia Gas System Service Corporation. Solar energy for LNG vaporization. 4,331,129, Cl. 126-427.000.
Hongo, Yasuo; Tuzuki, Yoshinori; and Miyawaki, Masao, to Nihon Tokushurozai Kabushiki Kaisha. Refractory composition. 4,331,773, Cl. 501-128.000.
Honig, Ernst-August: *See*—
Piech, Ferdinand; Dorpmund, Heinz; Oberpichler, Gerd; Honig, Ernst-August; and Schmidt, Dieter, 4,331,045, Cl. 74-867.000.
Hood, Edwin E., to Bendix Corporation, The. Bicycle wheel and brake assembly. 4,330,914, Cl. 29-159.010.
Hooker Chemicals & Plastics Corp.: *See*—
Buckley, Edward Z., 4,331,230, Cl. 198-484.000.
Wolpert, Stephen M., 4,331,715, Cl. 427-240.000.
Horix Manufacturing Company: *See*—
Wilhere, Charles V., 4,331,186, Cl. 141-98.000.
Horn, Franziskus; and Fluck, Ekkehard, to Degesch GmbH. Process for preparing aluminum or magnesium phosphide. 4,331,642, Cl. 423-299.000.
Horsch, Joachim: *See*—
Kolthoff, C. Paul; Horsch, Joachim; and Gaines, John W., 4,331,208, Cl. 180-6.200.
Hoshino, Noriyuki: *See*—
Imai, Hiroto; and Hoshino, Noriyuki, 4,331,053, Cl. 83-174.000.
Hoskinson, Ronald M.: *See*—
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., 4,331,657, Cl. 424-88.000.
Hosoya, Tadasuke: *See*—
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.
Howard, Bruce S.; and Walters, William O., to Boeing Company, The. Indenter-type hardness testing apparatus. 4,331,026, Cl. 73-81.000.
Hoyt, Richard C., to Rockwell International Corporation. Treatment of fuel pellets. 4,331,618, Cl. 264-0.500.
Hristov, Hristomir D.: *See*—
Minchev, Pavel M.; Hristov, Hristomir D.; Lazarov, Stoyan R.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,331,279, Cl. 228-37.000.
Huba, Francis; and Zorska, Roman, to Diamond Shamrock Corporation. Electrolytic-ultrafiltration apparatus and process for recovering solids from a liquid medium. 4,331,525, Cl. 204-181.00F.
Huber, Paul G., to General Electric Company. Load control and switching circuits. 4,331,914, Cl. 323-324.000.
Hubschi, Kurt: *See*—
Murphy, Preston V.; and Hubschi, Kurt, 4,331,840, Cl. 179-111.00E.
Hughes Aircraft Company: *See*—
Basiulis, Algerd; and Minning, Charles P., 4,331,200, Cl. 165-104.220.
Clark, Kenneth M., 4,330,965, Cl. 51-217.00R.
Duncan, James S.; and Pines, Michael Y., 4,331,874, Cl. 250-347.000.
Parrish, William J., 4,331,889, Cl. 307-311.000.
Hughes, John W.: *See*—
Conway, Harry E.; and Hughes, John W., 4,331,830, Cl. 174-16.00R.
Hughes, Royal W. Portable golf practice station. 4,331,332, Cl. 273-195.00B.
Huling, James K., to Barry-Wehmiller Company. Steam and water conservation system for pasteurizers. 4,331,629, Cl. 422-25.000.
Humlong, Robert F., to Wald Manufacturing Company. Bicycle basket. 4,331,270, Cl. 224-32.00R.
Hung, Michael. Horizontal hydraulic wood splitter. 4,331,192, Cl. 144-193.00A.
Hung, Paul P.; and Lee, Shaw-Guang, to Abbott Laboratories. Deoxyribonucleic acid synthesis using binding protein extracted from chick embryo fibroblasts. 4,331,589, Cl. 260-112.00R.
Hunter, Radcliffe W. Magnifying device. 4,331,381, Cl. 350-116.000.
Hunter, Walter D., to Texaco Development Corp. Secondary recovery process. 4,331,796, Cl. 526-287.000.
Hunter, William R., to Texas Instruments Incorporated. Method of fabricating narrow deep grooves in silicon. 4,331,708, Cl. 427-93.000.
Hurst, Albert: *See*—
Curtis, John S.; and Hurst, Albert, 4,331,832, Cl. 174-57.000.
Husson, Alan L., to Westinghouse Electric Corp. Elevator system. 4,331,220, Cl. 187-29.00R.
Huyck Corporation: *See*—
Throp, Benjamin A., 4,330,947, Cl. 34-54.000.
Hyatt, Charles J., to PPG Industries, Inc. Method of and apparatus for severing a glass sheet. 4,331,273, Cl. 225-2.000.
Ichimura, Yoshiaki; and Inoue, Yusaku, to Japan Aviation Electronics Industry, Ltd. Electrical connector. 4,331,371, Cl. 339-74.00R.
Ide, Tosiaki: *See*—
Uehori, Tatsuo; Watanabe, Akio; and Ide, Tosiaki, 4,331,489, Cl. 148-105.000.
Idel, Karsten; and Merten, Josef, to Bayer Aktiengesellschaft. Process for the preparation of polyarylene sulphides. 4,331,801, Cl. 528-388.000.
Igarashi, Hitoshi: *See*—
Kubo, Yoshimi; and Igarashi, Hitoshi, 4,331,477, Cl. 75-228.000.
Iizuka, Tomio: *See*—
Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, 4,331,286, Cl. 228-198.000.
Ikebe, Jun: *See*—
Kohzai, Yoshinori; Komiya, Hidetsugu; Amemiya, Yoichi; Ikebe, Yo; and Ikebe, Jun, 4,331,910, Cl. 318-618.000.
Ikebe, Yo: *See*—
Kohzai, Yoshinori; Komiya, Hidetsugu; Amemiya, Yoichi; Ikebe, Yo; and Ikebe, Jun, 4,331,910, Cl. 318-618.000.

Ikeda, Minoru; Yoshioka, Teruhiko; and Inoue, Kazutaka, to Mitsubishi Rayon Co., Ltd. Process for preparation of high purity isobutylene. 4,331,824, Cl. 585-638.000.
Ikeda, Susumu: *See*—
Tokuda, Takuro; Ikeda, Susumu; and Kubota, Yoshikazu, 4,331,685, Cl. 424-325.000.
Ikehata, Shigeki: *See*—
Fujino, Junichi; Miyazaki, Hideto; and Ikehata, Shigeki, 4,331,906, Cl. 315-368.000.
Ikuta, Hironori: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.
Imai, Hiroto; and Hoshino, Noriyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Rotary die cutter. 4,331,053, Cl. 83-174.000.
Imai, Osamu: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.
Imaizumi, Hiroshi: *See*—
Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, 4,332,012, Cl. 364-468.000.
Imamura, Yoshiyuki, to Laurel Bank Machine Co., Ltd. Apparatus for controlling discharge of like articles from a plurality of containers. 4,331,259, Cl. 221-11.000.
Imperial Chemical Industries Limited: *See*—
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,331,490, Cl. 149-46.000.
Staniland, Philip A., 4,331,798, Cl. 528-125.000.
Whyman, Robin, 4,331,825, Cl. 585-752.000.
Ina, Kenzo: *See*—
Nakazawa, Tamotsu; Ina, Kenzo; and Minagawa, Takashi, 4,332,014, Cl. 364-900.000.
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, to Teijin Limited. Process for producing aromatic polyesters having an increased degree of polymerization. 4,331,800, Cl. 528-289.000.
Inata, Hiroo: *See*—
Kudo, Akira; Inata, Hiroo; and Ogasawara, Makoto, 4,331,697, Cl. 427-2.000.
Ingram, Arthur J.; and Weingrod, Irving, to Bell Telephone Laboratories, Incorporated. Package for semiconductor integrated circuits. 4,331,831, Cl. 174-52.0FP.
Ingram, James A.: *See*—
Kuntz, David H.; and Ingram, James A., 4,331,162, Cl. 128-761.000.
Inoue, Kazutaka: *See*—
Ikeda, Minoru; Yoshioka, Teruhiko; and Inoue, Kazutaka, 4,331,824, Cl. 585-638.000.
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, to Nippon Petrochemicals Co., Ltd. Substituted norbornanone acetals, process for preparing the same, and perfume compositions containing the same. 4,331,569, Cl. 252-522.00R.
Inoue, Yusaku: *See*—
Ichimura, Yoshiaki; and Inoue, Yusaku, 4,331,371, Cl. 339-74.00R.
Institut Dr. Friedrich Forster Prufgeratebau: *See*—
Kalisch, Alfons; and Stritzke, Gunther, 4,331,920, Cl. 324-225.000.
Institut Francais du Petrole: *See*—
Castel, Yvon, 4,331,207, Cl. 175-317.000.
Institute po Metaloznanie i Technologia na Metalite: *See*—
Minchev, Pavel M.; Hristov, Hristomir D.; Lazarov, Stoyan R.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,331,279, Cl. 228-37.000.
Intel Corporation: *See*—
Liu, Sheau-Ming S., 4,330,931, Cl. 29-571.000.
International Business Machines Corporation: *See*—
Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., 4,332,026, Cl. 370-66.000.
Chuang, Tung J.; Coburn, John W.; and Kay, Eric, 4,331,504, Cl. 156-635.000.
Jadus, Dale K.; and Seeger, Richard O., 4,331,887, Cl. 307-270.000.
Joccotton, Jacky H.; and Vanoudheusden, Bernard, 4,332,028, Cl. 371-21.000.
Messina, Benedicto U.; and Silkman, William D., 4,332,010, Cl. 364-200.000.
Perner, Fred A.; and Provazek, Lionel D., 4,331,886, Cl. 307-270.000.
Petersen, Kurt E., 4,332,000, Cl. 361-283.000.
VanLokeren, David C., 4,331,964, Cl. 346-75.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,331,571, Cl. 252-522.00R.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,331,550, Cl. 252-174.110.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,331,570, Cl. 252-522.00R.
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,331,611, Cl. 260-464.000.
International Harvester Co.: *See*—
Kolthoff, C. Paul; Horsch, Joachim; and Gaines, John W., 4,331,208, Cl. 180-6.200.
International Nickel Co., Inc., The: *See*—
Wilson, Richard K., 4,331,741, Cl. 428-679.000.
International Paper Company: *See*—
Nowacki, Ulrich G., 4,331,435, Cl. 493-178.000.
InterNorth: *See*—
Burns, Edward J., 4,331,445, Cl. 44-6.000.
Invernizzi, Renzo: *See*—
Ligorati, Ferinando; Invernizzi, Renzo; and Catenacci, Roberto, 4,331,790, Cl. 526-119.000.
Ireland, Robert W. Multiple switch actuating mechanism. 4,331,853, Cl. 200-330.000.
Iri, Inc.: *See*—
Cogswell, Ned W.; Eskin, Gerald J.; and Wright, W. Andrew, Jr., 4,331,974, Cl. 358-86.000.
Eskin, Gerald J.; Baron, Penny H.; and Malec, John, 4,331,973, Cl. 358-84.000.
Irritech, Advanced Irrigation Technologies: *See*—
Gilad, Yigal, 4,331,294, Cl. 239-222.170.
Irving, Raymond C.: *See*—
Julian, Keith; and Irving, Raymond C., 4,331,747, Cl. 429-160.000.
Isaacson, Henry V.; Wright, Beth G.; and Wright, Hal E., to Eastman Kodak Company. Electrically photosensitive materials and elements for photoelectrophoretic imaging processes. 4,331,751, Cl. 430-18.000.
Iseki, Ichio: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.
Ishibashi, Yoshiyuki; Tagami, Eijiro; Hiraharu, Teruo; and Yasukawa, Shiro, to Japan Synthetic Rubber Co., Ltd. Polymer particles comprising ethylenically unsaturated monomers as main constituent and having localized thereon conjugated diolefin (co-)polymer layer. 4,331,784, Cl. 525-313.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.
Ishihara, Toshinobu: *See*—
Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, 4,331,820, Cl. 570-189.000.
Ishii, Yasunobu: *See*—
Kurumada, Katsuhiko; Asai, Kazuyoshi; and Ishii, Yasunobu, 4,331,967, Cl. 357-3.000.
Ishijima, Hiroshi: *See*—
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.
Ishikawa, Hidehiko: *See*—
Matsumura, Eiji; Ishikawa, Hidehiko; and Misaki, Hideo, 4,331,763, Cl. 435-190.000.
Ishiwata, Hisao: *See*—
Shimizu, Tatuo; Ishiwata, Hisao; Sano, Tetsu; and Aramaki, Yoshimitsu, 4,331,898, Cl. 313-59.000.
Isogai, Yo: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,331,807, Cl. 544-224.000.
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, to Mitsui Toatsu Chemicals, Inc.; and Toyo Engineering Corporation. Catalytic gasification. 4,331,451, Cl. 48-214.00A.
Itek Corporation: *See*—
Halewijn, Harry J.; and Cohen, Arnold H., 4,331,274, Cl. 226-15.000.
Ito, Takashi: *See*—
Nozaki, Takao; and Ito, Takashi, 4,331,710, Cl. 427-94.000.
ITT Industries, Inc.: *See*—
Becht, Reimund; and Bohm, Peter, 4,330,996, Cl. 60-581.000.
Berisch, Volker, 4,331,363, Cl. 303-6.00C.
Miskin, Leslie; Schenstrom, Mauritz F.; and Kunz, Detlev, 4,331,892, Cl. 307-448.000.
Ivary, David J.; and Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Web feeding method and apparatus for a printer. 4,331,302, Cl. 242-71.900.
Iwasawa, Teruo: *See*—
Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,331,864, Cl. 250-204.000.
Iwazaki, Tadayoshi: *See*—
Tamaki, Kazufuto; Iwazaki, Tadayoshi; Takayanagi, Shigeo; and Yamamoto, Saburo, 4,331,617, Cl. 261-72.00R.
Izawa, Motowo: *See*—
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, 4,331,598, Cl. 260-239.30P.
Izod, Thomas P. J., to Union Carbide Corporation. Removal of caffeine by selective adsorption using zeolite adsorbents. 4,331,694, Cl. 426-422.000.
J. E. Love Company: *See*—
Moore, Paul J., 4,330,983, Cl. 56-314.000.
Jadus, Dale K.; and Seeger, Richard O., to International Business Machines Corporation. Current switch driving circuit arrangements. 4,331,887, Cl. 307-270.000.
Jagenberg Werke AG: *See*—
Hombach, Theodor; and Welp, Ewald G., 4,331,056, Cl. 83-666.000.
Jamer, Ernst R. Self locking container closure. 4,331,248, Cl. 215-256.000.
Jamesbury Corp.: *See*—
Summers, Anthony C.; and MacAfee, Jerry D., 4,331,319, Cl. 251-173.000.
Jandrasi, Frank J., to General Signal Corporation. Shut-off valve for high temperature erosive flow. 4,331,316, Cl. 251-86.000.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; Tonomura, Yoshinobu; Takenoya, Hideaki; and Hara, Masanori, 4,331,090, Cl. 112-229.000.
Hisatake, Michio; Kasuga, Noboru; and Sano, Yasuro, 4,331,092, Cl. 112-275.000.
Makino, Yoshimitsu; and Orii, Akira, 4,331,890, Cl. 307-326.000.

Janssens, Theo; and Willems, Victor, to BFG Glassgroup. Method of manufacturing glazing panels. 4,331,282, Cl. 228-124.000.

Japan Aviation Electronics Industry, Ltd.: *See*—
Ichimura, Yoshiaki; and Inoue, Yusaku, 4,331,371, Cl. 339-74.00R.

Japan Synthetic Rubber Co., Ltd.: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Hiraharu, Teruo; and Yasukawa, Shiro, 4,331,784, Cl. 525-313.000.

Jaulmes, Christian, to Ateliers de la Motobecane. Anti-theft device. 4,331,013, Cl. 70-278.000.

JEDCO Products Limited, Inc.: *See*—
Gibstein, Edward; and Nortman, Jeffrey, 4,332,007, Cl. 362-200.000.

Jennings, Thomas C.; and Fletcher, Charles W., Jr., to Dart Industries, Inc. Resin stabilizer systems of organotin sulfur-containing compounds and metal compounds. 4,331,587, Cl. 524-181.000.

Jensen, James W.: *See*—
Miller, Stanley J.; Jensen, James W.; and Heniser, Richard J., 4,331,014, Cl. 72-93.000.

Jessen, John W. Method of performing an emergency cricothyrotomy. 4,331,138, Cl. 128-200.260.

Jessup, David G.: *See*—
Bentley, Stanley L.; and Jessup, David G., 4,331,298, Cl. 239-690.000.

Jewison, Charles B.; and Buck, Brian E., to Dukane Corporation. Front/rear projection system. 4,331,397, Cl. 353-71.000.

JLG Industries, Inc.: *See*—
Grove, John L.; Merz, Ernest J.; and Walters, Charles W., 4,331,215, Cl. 182-2.000.

Joccotton, Jacky H.; and Vanoudheusden, Bernard, to International Business Machines Corporation. Method of measuring the memory address access time (AAT) utilizing a data recirculation technique, and a tester for accomplishing same. 4,332,028, Cl. 371-21.000.

Jockel, Alfred: *See*—
Denner, Peter; Ernst, Egon; and Jockel, Alfred, 4,330,934, Cl. 29-726.000.

Jockel, Heinz; Moller, Friedrich W.; Renner, Hans J.; and Siebert, Gerd, to Metallgesellschaft Aktiengesellschaft. Process of producing town gas from methanol. 4,331,449, Cl. 48-197.00R.

Jodon Engineering Associates, Inc.: *See*—
Wilson, Scott E., 4,331,029, Cl. 73-117.300.

Johanns, Johannes H. M.; and van Eck, Arnoldus H. M., to U.S. Philips Corporation. Color television display tube. 4,331,904, Cl. 313-417.000.

John Wyeth & Brother Limited: *See*—
Crossley, Roger, 4,331,673, Cl. 424-263.000.

John Zink Company: *See*—
Schwartz, Robert E.; Dinsmore, Harold L.; Peters, Donald J.; and Long, Gary W., 4,331,456, Cl. 55-26.000.

Johnson, Bruce K., to Polaroid Corporation. Hand held camera having protectable and balanced switching arrangement. 4,331,404, Cl. 354-126.000.

Johnson, Larry K., to Texas Instruments Incorporated. Printed circuit board having data input devices mounted thereon and input devices therefor. 4,331,851, Cl. 200-159.00B.

Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Pharmacologically active 4-[2-hydroxy-4-(substituted]phenyl)naphthalen-2(1H)-ones and 2-ols, derivatives thereof and intermediates therefor. 4,331,602, Cl. 549-337.000.

Johnson, Randall K.; Cummings, Kenneth W.; and Perethian, Charles M., to First Champaign Corporation. Motorcycle fairing body extender. 4,331,358, Cl. 296-78.100.

Jones, Joe W., to General Motors Corporation. Accumulator-dehydrator assembly for an air conditioning system. 4,331,001, Cl. 62-503.000.

Jones, Othel L., to Copeland Corporation. Reversible unidirectional flow pump with frictionally engaged axial valve plate. 4,331,420, Cl. 418-32.000.

Jones, Othel L.; and Cheney, Lawrence W. Reversible unidirectional flow pump with axial frictionally engaged recessed valve plate. 4,331,421, Cl. 418-32.000.

Jones, Shattuc: *See*—
Sidline, George B.; and Jones, Shattuc, 4,331,863, Cl. 235-434.000.

Josef Uhlmann Maschinenfabrik GmbH & Co. KG: *See*—
Kuttenbaum, Valentin; and Henle, Ernst, 4,331,436, Cl. 493-310.000.

Jos. Hunkeler AG, Fabrik Fuer Graphische Maschinen: *See*—
Felix, Willy, 4,331,327, Cl. 271-9.000.

Joyner, Auvin H. Stock/sauce skimmer. 4,331,189, Cl. 141-343.000.

Juda, Walter; Allen, Robert J.; and Lindstrom, Robert, to Prototech Company. Process for the recovery of hydrogen-reduced metals, ions and the like at porous hydrophobic catalytic barriers. 4,331,520, Cl. 204-105.00R.

Julia, Marc: *See*—
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,331,814, Cl. 560-255.000.

Julian, Keith; and Irving, Raymond C., to Chloride Group Limited. Electric storage batteries. 4,331,747, Cl. 429-160.000.

Jungblut, Camille: *See*—
Foy, Paul R.; Jungblut, Camille; and Deleens, Gerard E., 4,331,786, Cl. 525-408.000.

Kabel-und Metallwerke Gutehoffnungshuette AG: *See*—
Klebl, Wolfram; Schatz, Friedrich; and Ziemek, Gerhard, 4,331,281, Cl. 228-125.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.

Kabushiki Kaisha Hatsuyume Wata Sohonpo: *See*—
Fukushima, Kyuji, 4,330,892, Cl. 5-437.000.

Kabushiki Kaisha Riken: *See*—
Wada, Masahiko; and Shirogane, Junji, 4,330,963, Cl. 51-157.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,331,076, Cl. 101-110.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Nakayama, Shozo, 4,330,999, Cl. 62-217.000.

Kadin, Saul B., to Pfizer Inc. Carboxamide compounds as SRS-A antagonists. 4,331,683, Cl. 424-309.000.

Kadowaki, Kunio: *See*—
Kato, Yuzo; Kako, Mikitoshi; and Kadowaki, Kunio, 4,331,616, Cl. 261-50.00A.

Kadykowski, Frank, to Dana Corporation. Groove grinding fixture. 4,330,966, Cl. 51-230.000.

Kagawa, Saburo, to Kawasaki Jukogyo Kabushiki Kaisha. Process for separating p-xylene from a hydrocarbon mixture. 4,331,826, Cl. 585-812.000.

Kagawa, Yoshii, to Alps Electric Co., Ltd. Thick film printed circuit. 4,331,949, Cl. 338-307.000.

Kageyama, Masao: *See*—
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

Kajiyama, Sigeru: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Kakiuchi, Kunio. Simplified vacuum-package sealer apparatus. 4,330,975, Cl. 53-79.000.

Kako, Mikitoshi: *See*—
Kato, Yuzo; Kako, Mikitoshi; and Kadowaki, Kunio, 4,331,616, Cl. 261-50.00A.

Kaleta, Gary S.: *See*—
Landregan, Robert J.; and Kaleta, Gary S., 4,331,083, Cl. 105-406.00R.

Kalina, Alexander I. Method for recovery of hydrocarbon material from hydrocarbon material-bearing formations. 4,331,202, Cl. 166-245.000.

Kalisch, Alfons; and Stritzke, Gunther, to Institut Dr. Friedrich Forster Prufgeratebau. Magnetic or magneto-inductive materials tester with improved processing circuit. 4,331,920, Cl. 324-225.000.

Kamada, Atsuya: *See*—
Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, 4,331,280, Cl. 228-112.000.

Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, to Sanyo Chemical Industries, Ltd.; and Coal Mining Research Centre, The. Coal treatment for ash removal and agglomeration. 4,331,447, Cl. 44-20.000.

Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, to Nippondenso Co., Ltd. Magnetic type fuel injection valve. 4,331,317, Cl. 251-139.000.

Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, to Nippondenso Co., Ltd. Magnetic type fuel injection valve. 4,331,318, Cl. 251-139.000.

Kamm, Lawrence J. Manufacturing machine. 4,331,229, Cl. 198-345.000.

Kammann, Karl P., Jr.; and Phillips, Astrid-Ilsaabe, to Ferro Corporation. Catalyzing the sulfurization of olefins by tertiary phosphines, and an oil based material containing an additive amount of a sulfurized olefin so produced. 4,331,564, Cl. 252-45.000.

Kammann, Knut; and Tiemann, Gerhard, to Werner Kammann Maschinenfabrik GmbH. Apparatus for cutting portions out of a web of material. 4,331,055, Cl. 83-318.000.

Kan, Peter T.: *See*—
Christman, Donald L.; and Kan, Peter T., 4,331,809, Cl. 544-238.000.
Christman, Donald L.; and Kan, Peter T., 4,331,810, Cl. 544-296.000.

Kanai, Takeo: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.

Kanda, Kimio: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Kaneko, Shigeo: *See*—
Doi, Yoshinao; Fujii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,331,622, Cl. 264-45.300.

Kanno, Ken-ichi: *See*—
Suzuki, Masayuki; Sato, Yuichi; and Kanno, Ken-ichi, 4,331,699, Cl. 427-8.000.

Kansas Jack, Inc.: *See*—
Eck, Leonard F., 4,330,945, Cl. 33-288.000.

Kanthal Corporation, The: *See*—
Best, Albert B., 4,330,908, Cl. 29-611.000.

Kapaan, Hendrikus J.; and Verburgh, Martin B., to SKF Industrial Trading & Development Co. B.V. Process for production of an object consisting of at least two parts movable relative to each other, one of which is substantially enclosed within the other. 4,330,911, Cl. 29-148.40A.

Kapps, Manfred: *See*—
Sommerfeld, Claus-Dieter; Haas, Peter; Wagner, Kuno; and Kapps, Manfred, 4,331,778, Cl. 521-129.000.

Karbosky, Joseph T.; and Bailey, Dunn M., to Phillips Petroleum Company. Cryogenic separation of lean and rich gas streams. 4,331,461, Cl. 62-28.000.

Karlstads Handels - och Konsult AB: *See*—
Margard, Gunnar, 4,331,095, Cl. 114-201.00R.

Karraker, David O., to Caterpillar Tractor Co. Auxiliary engine stoppage apparatus. 4,331,114, Cl. 123-198.0DB.

Kashiwa, Norio: *See*—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,331,561, Cl. 252-429.00B.

Kasuga, Noboru: *See*—
Hisatake, Michio; Kasuga, Noboru; and Sano, Yasuro, 4,331,092, Cl. 112-275.000.

Katagi, Shoji: *See*—
Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, 4,332,012, Cl. 364-468.000.

Kato, Toshihiro; and Tsunekawa, Yuzo, to Fuji Photo Film Co., Ltd. Method and apparatus for automatically loading flexible belt-shaped recording medium. 4,330,925, Cl. 29-464.000.

Kato, Yuzo; Kako, Mikitoshi; and Kadowaki, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd., a part interest to each. Adjusting screw of a carburetor. 4,331,616, Cl. 261-50.00A.

Kaupan, Randall T.: *See*—
Gilster, Daniel D.; and Kaupan, Randall T., 4,330,902, Cl. 17-1.00R.

Kawai, Katsumi: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,331,058, Cl. 84-1.210.

Kawai, Sueo: *See*—
Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, 4,331,897, Cl. 310-234.000.

Kawai, Tsutomu, to Funai Electric Co., Ltd.; and Efuti Giken Co., Ltd. Cassette base for a video tape recorder. 4,331,988, Cl. 360-96.600.

Kawamoto, Keiji; and Yoshioka, Toshihiro, to Mitsui Petrochemical Industries, Ltd. Liquid phase catalytic co-oxidation process. 4,331,608, Cl. 260-406.000.

Kawamura, Masaharu: *See*—
Kiuchi, Masayoshi; Kawamura, Masaharu; Yamada, Masanori; and Murakami, Hiroyasu, 4,331,406, Cl. 354-128.000.

Kawamura, Tomozuchi; Haneda, Hisao; and Araoka, Mamoru, to Mitsubishi Jukogyo Kabushiki Kaisha. Forced-flow once-through boiler for variable supercritical pressure operation. 4,331,105, Cl. 122-406.00S.

Kawarada, Tsutomu; Yamada, Kimichika; Sango, Hiroshi; and Kiyokawa, Katsushige, to Copal Company Limited. Device for transporting slide film mounts in a slide film projector. 4,331,398, Cl. 353-113.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Kagawa, Saburo, 4,331,826, Cl. 585-812.000.

Kawasaki, Keiji, to Showa Denko KK. Method for electrolyzing water or aqueous solutions. 4,331,523, Cl. 204-129.000.

Kay, David B.: *See*—
Rees, James D.; Kay, David B.; and Lama, William L., 4,331,380, Cl. 350-96.250.

Kay, Eric: *See*—
Chuang, Tung J.; Coburn, John W.; and Kay, Eric, 4,331,504, Cl. 156-635.000.

Kay Laboratories, Inc.: *See*—
Arrhenius, Gustaf O., 4,331,556, Cl. 252-363.500.

Kay Springs, Incorporated: *See*—
Krakauer, Daniel, 4,331,361, Cl. 297-460.000.

Keeton Sons & Co. Ltd.: *See*—
Doyle, John B., 4,331,018, Cl. 72-389.000.

Keinath, Manfred: *See*—
Kurner, Heinrich; and Keinath, Manfred, 4,331,008, Cl. 66-163.000.

Keizer, Eugene O., to RCA Corporation. Technique for uniform stylus configuration. 4,330,915, Cl. 29-169.500.

Keller, John W., Jr.; Bursack, William E.; and Coombes, Alan, to Stimtech, Inc. Mutually noninterfering transcutaneous nerve stimulation and patient monitoring. 4,331,157, Cl. 128-419.00R.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Method of producing current lead-ins having coaxial construction. 4,331,827, Cl. 373-139.000.

Kelsey-Hayes Co.: *See*—
Evans, Anthony C.; and Rinker, Kurt H., 4,331,221, Cl. 188-73.440.

Kendall Company, The: *See*—
Arkans, Edward J., 4,331,133, Cl. 128-87.00R.

Kendrick, Paul W.: *See*—
Dittman, Donald C.; Kendrick, Paul W.; and Thibodeaux, Leon J., 4,331,880, Cl. 290-38.00R.

Kenmochi Hirohito: *See*—
Nishikuri, Masao; Yamazaki, Michio; Kojima, Kiyoteru; Seino, Junzaburo; and Kenmochi, Hirohito, 4,331,584, Cl. 524-206.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Dillmann, Hans G.; Furrer, Jurgen; and Pasler, Horst, 4,331,460, Cl. 55-485.000.

Kerry, John C.: *See*—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,331,680, Cl. 424-303.000.

Kessinger, Charles; and Dolin, Russell. Door lock drill assembly. 4,331,411, Cl. 408-97.000.

Kickuth, Reinhold W. Method for building up defined phosphate deposits from waste phosphates. 4,331,538, Cl. 210-602.000.

Kiefer, Karl, to TRW Inc. Method and apparatus for the installation and withdrawal of pumping equipment in an underwater well. 4,331,203, Cl. 166-339.000.

Kienzle Apparate GmbH: *See*—
Schultze, Hartmut, 4,331,965, Cl. 346-121.000.

Kiko, Frederick J., to Reliance Electric Company. Voice frequency repeater and term sets and other circuits therefor. 4,331,842, Cl. 179-170.0NC.

Kikuchi, Katsutoshi: *See*—
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, 4,331,451, Cl. 48-214.00A.

Killpatrick, Don H.; and Thresh, Henry R., to United States of America, Energy. Method for manufacturing magnetohydrodynamic electrodes. 4,330,920, Cl. 29-423.000.

Killy, Earl J., to Manville Service Corporation. Four-ply handled carton. 4,331,289, Cl. 229-52.00B.

Kindrick, Robert H., to Sherwin-Williams Company, The. Composite zinc oxide coating on an inert pigment core product and process. 4,331,706, Cl. 427-74.000.

Kinetics Container Corporation: *See*—
Wharton, Paul B., Jr., 4,331,287, Cl. 229-16.00D.

King, James R., Jr., to Ktrom Industries, Inc. Metal removal apparatus and method. 4,331,472, Cl. 75-109.000.

King, James R., Jr., to Ktrom Industries, Inc. Silver removal apparatus and method. 4,331,473, Cl. 75-109.000.

King, Lloyd H., Sr., to Durance, Inc. Inline dispersal valve. 4,331,174, Cl. 137-268.000.

Kingsdown Medical Consultants Limited: *See*—
Steer, Peter L.; and Edwards, John V., 4,331,148, Cl. 128-283.000.

Kinjo, Hisao; and Ozawa, Keiji, to Victor Company of Japan, Ltd. High density recording system using side-by-side information and servo tracks. 4,331,976, Cl. 358-128.600.

Kirby, Raymond L., Jr.: *See*—
Ivary, David J.; and Kirby, Raymond L., Jr., 4,331,302, Cl. 242-71.900.

Kiselev, Vladimir P.: *See*—
Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy, 4,331,241, Cl. 209-589.000.

Kishi, Ikuji: *See*—
Ukita, Kenkichi; Nakano, Tatsuo; and Kishi, Ikuji, 4,331,795, Cl. 526-273.000.

Kitai, Kiyoshi; and Saito, Takeo, to Seiko Koki Kabushiki Kaisha. Focal point coincidence sensing device. 4,331,399, Cl. 354-25.000.

Kitamura, Koichi: *See*—
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.

Kitano, Hisao: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,331,569, Cl. 252-522.00R.

Kitobuki Seihan Printing Co., Ltd.: *See*—
Saitoh, Joichi, 4,331,515, Cl. 204-228.000.

Kitt, Rudi: *See*—
Roller, Hanno; Nauerth, Karl-Heinz; and Kitt, Rudi, 4,331,860, Cl. 219-544.000.

Kiuchi, Masayoshi; Kawamura, Masaharu; Yamada, Masanori; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Indicating device for computer type electronic flash unit. 4,331,406, Cl. 354-128.000.

Kiyokawa, Katsushige: *See*—
Kawarada, Tsutomu; Yamada, Kimichika; Sango, Hiroshi; and Kiyokawa, Katsushige, 4,331,398, Cl. 353-113.000.

Kjaerbye-Petersen, Steffen: *See*—
Madsen, Finn T.; and Kjaerbye-Petersen, Steffen, 4,331,499, Cl. 156-304.500.

Klaass, Gunter: *See*—
Gleichechagen, Peter; and Klaass, Gunter, 4,331,718, Cl. 427-391.000.

Klar, Erhard: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,331,478, Cl. 75-228.000.

Klauck, Manfred, to Flutec Fluidtechnische Gerate GmbH. Apparatus for filtering a liquid. 4,331,537, Cl. 210-416.100.

Klauke, Erich: *See*—
Marhold, Albrecht; and Klauke, Erich, 4,331,613, Cl. 260-544.00B.
Schubart, Rudiger; Klauke, Erich; Naumann, Klaus; and Fuchs, Rainer, 4,331,821, Cl. 570-196.000.

Klebe, Herbert F., to Harnischfeger Corporation. Double masted warehouse crane. 4,331,418, Cl. 414-277.000.

Klebl, Wolfram; Schatz, Friedrich; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshuette AG. Process and apparatus for production of welded tubes. 4,331,281, Cl. 228-125.000.

Klein, Karl-Heinz; and Kutzner, Reinhard, to Robert Bosch GmbH. Method and apparatus for eliminating crosstalk in magnetic tape recorders. 4,331,992, Cl. 360-124.000.

Klein, Richard M.: *See*—
Briere, Alfred D.; and Klein, Richard M., 4,331,463, Cl. 65-13.000.
Kleiner, Hans-Jerg: *See*—
Wissmann, Hans; and Kleiner, Hans-Jerg, 4,331,592, Cl. 260-112.50R.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. Carboamidoalkyl norbornanes and organoleptic use in detergents. 4,331,550, Cl. 252-174.110.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. Carboamidoalkyl norbornanes and organoleptic use in perfumes. 4,331,570, Cl. 252-522.00R.
Klepfer, Harlan A. Disposable protective garment. 4,330,888, Cl. 2-48.000.
Klepper, Helmut: *See*—
Domer, Wolfgang; and Klepper, Helmut, 4,331,366, Cl. 308-22.000.
Klingelnberg Sohne: *See*—
Blechmann, Rudi, 4,330,942, Cl. 33-169.00R.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Leitgeb, Walter, deceased, 4,330,940, Cl. 33-126.70R.
Pluequet, Heinz, 4,331,112, Cl. 123-196.00S.
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., to Miles Laboratories, Inc. Therapeutic method for inhibiting gastric secretion by administration of 15-deoxy-16-hydroxy prostaglandins. 4,331,688, Cl. 424-331.000.
Knowlton, Reginald F.: *See*—
Blevins, Gerald G.; Fairbank, Fred S.; Hixson, Wayne E.; and Knowlton, Reginald F., 4,331,953, Cl. 340-539.000.
Kobayashi, Kazuo: *See*—
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.
Kobayashi, Masaru: *See*—
Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, 4,331,280, Cl. 228-112.000.
Kobayashi, Shigeharu; Takagi, Toshiyuki; and Hayashi, Chiaki, to Fuji Seiki Machine Works, Ltd. Two-tank high water pressure wet blasting machine with separate supply reservoir for abrasive particles. 4,330,968, Cl. 51-425.000.
Kobayashi, Takehiko: *See*—
Seike, Takashi; and Kobayashi, Takehiko, 4,331,731, Cl. 428-305.500.
Kobe Steel, Ltd.: *See*—
Sudo, Masatoshi; and Tsukatani, Ichiro, 4,331,488, Cl. 148-36.000.
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Lever, Richard N. Cam action cork. 4,331,250, Cl. 215-356.000.

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Bouillon, Claude; and Maignan, Jean, 4,331,656, Cl. 424-70.000.

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Maham, Robert M., to Texaco Inc. Combination for removing heavier liquid from the bottom of a storage tank. 4,331,536, Cl. 210-95.000.

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Bouillon, Claude; and Maignan, Jean, 4,331,656, Cl. 424-70.000.

Mair, Franz: *See*—
Peschke, Jurgen; Mair, Franz; and Zerle, Ludwig, 4,330,909, Cl. 26-75.000.

Maisenbacher, Hans; and Martin, Harald, to Mauser-Werke Oberndorf GmbH. Arrangement for the testing of a thread. 4,330,944, Cl. 33-199.00R.

Major, James M.: *See*—
Gueldner, Enrique; and Major, James M., 4,331,835, Cl. 178-3.000.

Makabe, Osamu; Murai, Yasushi; Okonogi, Tuneo; Onodera, Masahiro; Yoshida, Takashi; and Fukatsu, Shunzo, to Meiji Seika Kaisha, Ltd. Penicillin compounds. 4,331,597, Cl. 260-239.100.

Makino, Yoshimi: *See*—
Yorizumi, Mineo; and Makino, Yoshimi, 4,331,548, Cl. 252-62.610.

Makino, Yoshimitsu; and Orii, Akira, to Janome Sewing Machine Co. Ltd. Touch switch. 4,331,890, Cl. 307-326.000.

Makishima, Reichi, to Nitto Kohki Co., Ltd. Pipe coupling. 4,331,177, Cl. 137-556.000.

Makitalo, Valto J.: *See*—
Kunttu, Kalevi J.; Lilja, Launo L.; and Makitalo, Valto J., 4,331,087, Cl. 110-264.000.

Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., to Burroughs Corporation. Local area contention network data communication system. 4,332,027, Cl. 370-94.000.

Malec, John: *See*—
Eskin, Gerald J.; Baron, Penny H.; and Malec, John, 4,331,973, Cl. 358-84.000.

Maletsky, Albert: *See*—
Colon, Herman; and Maletsky, Albert, 4,331,576, Cl. 524-271.000.

Malinaric, Paul J.; and Squitieri, Vincent, to Chomerics, Inc. High powered over-voltage protection. 4,331,948, Cl. 338-21.000.

Mallen-Herrero, Jose: *See*—
Charlat, Patrice; Delmas, Bernard; and Mallen-Herrero, Jose, 4,331,223, Cl. 188-294.000.

Malugani, Jean-Pierre; and Robert, Guy, to Societe Anonyme dite: GIPELEC. Alkaline cation conductive vitreous composition and a method of preparing such a composition. 4,331,750, Cl. 429-193.000.

Man Bo, Inc.: *See*—
Choe, Pil Y., 4,332,006, Cl. 362-193.000.

Man Maschinenfabrik Augsburg-Nurnburg A.G.: *See*—
Hirt, Alfred, 4,331,505, Cl. 156-643.000.

Mangum-Sickles Industries, Inc.: *See*—
Nyman, Bengt E., 4,331,396, Cl. 352-85.000.

Manville Service Corporation: *See*—
Killy, Earl J., 4,331,289, Cl. 229-52.00B.

Mapco, Inc.: *See*—
Ord, Robinson, Jr., 4,331,025, Cl. 73-54.000.

Marabotto, Jose. Accompanying device for playing stringed instruments. 4,331,059, Cl. 84-317.000.

Marchisio, Giovanni, to Giovanni Marchisio & C. S.a.s. Circular knitting machine with a device for adjusting the stroke of the cylinder needles. 4,331,007, Cl. 66-55.000.

Margard, Gunnar, to Karlstads Handels - och Konsult AB. Arrangement for dividing a ship's free liquid surface. 4,331,095, Cl. 114-201.00R.

Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the preparation of trifluoromethylnaphthalenes. 4,331,613, Cl. 260-544.00B.

Marini-Bettolo, Rinaldo: *See*—
Wiesner, Karel; Marini-Bettolo, Rinaldo; Tsai, Connie S. J.; and Tsai, Thomas Y. R., 4,331,802, Cl. 536-5.000.

Marius, Huret R. H., to Etablissements Huret & Fils. Cycle gear-changer. 4,331,433, Cl. 474-79.000.

Market Innovators, Inc.: *See*—
Doll, Eugene N., 4,331,243, Cl. 211-49.00D.

Marki, Walter E.; Brown, Marvin R.; and Rivier, Jean E. F., to Salk Institute for Biological Studies, The. Bombesin analogs. 4,331,661, Cl. 424-177.000.

Marklund, Karl-Gerhard; Larsson, Hakan; and Sandstrom, Johnny. Unit preferably of wood. 4,330,973, Cl. 52-233.000.

Marquis, Robert P.; and Weileder, Peter, to Plastech Inc. Rigid and compressible dye tubes. 4,331,305, Cl. 242-118.110.

Marshall, Thomas C.: *See*—
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Lactone ring containing sulfonic acid esters. 4,331,605, Cl. 549-314.000.

Martin, Eugene R., to SWS Silicones Corporation. Ester containing silylated polyethers. 4,331,797, Cl. 528-26.000.

Martin, Harald: *See*—
Maisenbacher, Hans; and Martin, Harald, 4,330,944, Cl. 33-199.00R.

Martin, Jerry R.: *See*—
Tadanier, John S.; Hallas, Robert; and Martin, Jerry R., 4,331,804, Cl. 424-180.000.

Martin, Raymond G. Carpet stripping machine. 4,330,938, Cl. 30-169.000.

Martin, Thomas J., to MacMillan Bloedel Limited. Space dividers. 4,330,979, Cl. 53-452.000.
Martinez, Evidio. Sanding device. 4,330,964, Cl. 51-170.0MT.
Martinez, Manuel T. Automatic splicing systems of rolled belts or paper coils. 4,331,301, Cl. 242-58.100.
Maruyama, Eiichi: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.
Maryland Cup Corporation: *See*—
Balordi, Romano, 4,331,854, Cl. 219-10.510.
Masamotc, Jyunzo: *See*—
Hamada, Minoru; Sakurai, Hisaya; Masamoto, Jyunzo; Yoshida, Takeo; and Hazawa, Hiroshi, 4,331,439, Cl. 8-442.000.
Mash, William R. Mounting system for optical controls. 4,331,868, Cl. 250-239.000.
Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Mechanoacoustic transducer for use in transmitting high acoustic power densities into geological formations such as oil-saturated sandstone or shale. 4,332,017, Cl. 367-148.000.
Masuda, Nobuhito: *See*—
Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, 4,331,444, Cl. 23-230.00B.
Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,331,664, Cl. 424-246.000.
Matsko, Joseph J.; Whitt, Raymond O. D.; and Lange, Roy W., to Westinghouse Electric Corp. Time delayed undervoltage relay. 4,331,996, Cl. 361-92.000.
Matsko, Joseph J.; Lange, Emroy W.; Engel, Joseph C.; and Mercier, Bernard J., to Westinghouse Electric Corp. Circuit interrupter with digital trip unit and style designator circuit. 4,331,998, Cl. 361-93.000.
Matsko, Joseph J.: *See*—
Engel, Joseph C.; Elms, Robert T.; Mercier, Bernard J.; and Matsko, Joseph J., 4,331,997, Cl. 361-93.000.
Matsuda, Toshiharu: *See*—
Morita, Tomijiro; Takaiwa, Masakazu; and Matsuda, Toshiharu, 4,331,640, Cl. 423-242.000.
Matsui, Ichinosuke. Water bed. 4,330,893, Cl. 5-451.000.
Matsumura, Eiji; Ishikawa, Hidehiko; and Misaki, Hideo, to Toyo Jozo Kabushiki Kaisha. Process for production of ascorbate oxidase. 4,331,763, Cl. 435-190.000.
Matsumura, Shunichi: *See*—
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,331,800, Cl. 528-289.000.
Matsunaga, Makoto; and Mizobuchi, Akihito, to Mitsubishi Denki Kabushiki Kaisha. Stripline diode phase shifter. 4,331,942, Cl. 333-161.000.
Matsuoka, Hideoki; and Yamamoto, Yoshimi, to Nissan Motor Co., Ltd. Emergency lock type retractor. 4,331,304, Cl. 242-107.40A.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kondo, Shigeo; and Yoshiike, Nobuyuki, 4,331,385, Cl. 350-357.000.
Minakuchi, Hiroshi, 4,331,926, Cl. 328-48.000.
Okamura, Yasushi; and Tanaka, Kiichiro, 4,332,023, Cl. 369-177.000.
Uwano, Tomoki, 4,331,940, Cl. 331-99.000.
Matthes, Hans, to AEG-Elotherm, G.m.b.H. Process and apparatus for electrolytic metal processing. 4,331,524, Cl. 204-129.250.
Matthey Rustenburg Refiners (Pty) Limited: *See*—
Shanton, Kenneth J.; and Grant, Richard A., 4,331,634, Cl. 423-22.000.
Matula, Joseph P.: *See*—
Lambert, Merlan M.; and Matula, Joseph P., 4,331,529, Cl. 208-8.00R.
Mauleon, Jean-Louis: *See*—
Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W., 4,331,533, Cl. 208-113.000.
Mauser-Werke Oberndorf GmbH: *See*—
Maisenbacher, Hans; and Martin, Harald, 4,330,944, Cl. 33-199.00R.
Max-Planck-Gesellschaft: *See*—
Scheit, Karl H.; Reddy, Ergam R. S. P.; Murti, Tangirala R.; Pandit, Madhusudan W.; and Bhargava, Pushpa M., 4,331,764, Cl. 435-199.000.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, 4,331,662, Cl. 424-180.000.
Maximate Limited Partnership: *See*—
Russell, Frederick L.; and Davis, Charles M., 4,331,136, Cl. 128-163.000.
May, Michael G. Internal combustion engine. 4,331,115, Cl. 123-263.000.
Mayer, Edward F.; Diamond, Arthur S.; and Chang, Paul, to Ricoh Company, Ltd. Developer compositions with toner, coated carrier and lubricant. 4,331,756, Cl. 430-108.000.
Mayer, Norbert: *See*—
Hieber, Konrad; and Mayer, Norbert, 4,331,702, Cl. 427-10.000.
MCC Powers: *See*—
Chelcun, Darrell N.; Dougherty, Roderick J., Jr.; Belau, Kenneth P.; and Old, Robert L., Jr., 4,332,013, Cl. 364-505.000.
McCall, Francis L., to Specified Ceiling Systems. Lighting panel for drop ceilings. 4,332,005, Cl. 362-150.000.
McCall, Richard H., to Texaco Inc. Method of forming and assembling an anchor pullout apparatus. 4,330,926, Cl. 29-526.00R.
McCall, Robert, to Du Pont de Nemours, E. I., and Company. Water removal in nitration of aromatic hydrocarbons. 4,331,819, Cl. 568-939.000.
McCarthy, John T. Dual coated wire trolling line. 4,330,956, Cl. 43-4.000.
McCord Corporation: *See*—
Colby, Daniel E., 4,331,626, Cl. 264-310.000.
McCrobie, George L.; Rees, James D.; and Donnel, Roscoe J., to Xerox Corporation. Gas zoom lens. 4,331,388, Cl. 350-419.000.
McCulloch, Charles W.: *See*—
Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., 4,331,299, Cl. 239-691.000.
McDermott, David B.: *See*—
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granaistein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.
McDonie, Arthur F., to RCA Corporation. Rubidium-cesium-antimony photocathode. 4,331,701, Cl. 427-10.000.
McElheny, Donald C., to American Precision Industries Inc. Connection of wire leads to miniature coil assemblies. 4,331,946, Cl. 336-192.000.
McKay, Dwight L., to Phillips Petroleum Company. Producing increased yield of hydrogen by cracking petroleum with potassium-containing catalyst. 4,331,563, Cl. 252-455.00Z.
McKenny, Vernon G.: *See*—
Gosney, William M., Jr.; and McKenny, Vernon G., 4,331,968, Cl. 357-23.000.
McKeown, John A. Refuse receptacle protector. 4,331,341, Cl. 280-47.340.
Mechanical Technology Incorporated: *See*—
Miller, William H., Jr., 4,331,365, Cl. 308-9.000.
Meckel, Walter: *See*—
Wenzel, Wolfgang; and Meckel, Walter, 4,331,717, Cl. 427-389.700.
Megles, John E., Jr.: *See*—
Danielson, Paul S; and Megles, John E., Jr., 4,331,769, Cl. 501-32.000.
Meighan, Richard M., to Eltra Corporation. Curing of tetrabasic lead pasted battery electrodes. 4,331,516, Cl. 204-2.100.
Meiji Seika Kaisha, Ltd.: *See*—
Makabe, Osamu; Murai, Yasushi; Okonogi, Tuneo; Onodera, Masahiro; Yoshida, Takashi; and Fukatsu, Shunzo, 4,331,597, Cl. 260-239.100.
Meixner, Hans, to Siemens Aktiengesellschaft. Positive temperature coefficient (PTC) resistor heating device. 4,331,861, Cl. 219-553.000.
Mellinger, Gary A.: *See*—
Holub, Fred F.; and Mellinger, Gary A., 4,331,799, Cl. 528-185.000.
Melvin, Lawrence S., Jr.: *See*—
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,331,602, Cl. 549-337.000.
Menet, Albert: *See*—
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,331,814, Cl. 560-255.000.
Mercer, Paul D.: *See*—
Sutcliffe, Grenville G.; Bradley, Ronald F.; and Mercer, Paul D., 4,331,190, Cl. 141-392.000.
Mercer, William R.: *See*—
Sherer, Charles R.; and Mercer, William R., 4,331,278, Cl. 228-29.000.
Mercier, Bernard J.: *See*—
Engel, Joseph C.; Elms, Robert T.; Mercier, Bernard J.; and Matsko, Joseph J., 4,331,997, Cl. 361-93.000.
Matsko, Joseph J.; Lange, Emroy W.; Engel, Joseph C.; and Mercier, Bernard J., 4,331,998, Cl. 361-93.000.
Merck & Co. Inc.: *See*—
Racciato, Joseph S., 4,331,440, Cl. 8-495.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Eidenschink, Rudolf; Pohl, Ludwig; Romer, Michael; and del Pino, Fernando, 4,331,552, Cl. 252-299.600.
Merck Sharp & Dohme (I.A.) Corp.: *See*—
Girard, Yves, 4,331,679, Cl. 424-283.000.
Merten, Josef: *See*—
Idel, Karsten; and Merten, Josef, 4,331,801, Cl. 528-388.000.
Merz, Ernest J.: *See*—
Grove, John L.; Merz, Ernest J.; and Walters, Charles W., 4,331,215, Cl. 182-2.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Brauer, Juergen; and Schuck, Wolf-Dieter, 4,331,959, Cl. 343-18.00A.
Messina, Benedicto U.; and Silkman, William D., to International Business Machines Corporation. Cache synonym detection and handling mechanism. 4,332,010, Cl. 364-200.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Jockel, Heinz; Moller, Friedrich W.; Renner, Hans J.; and Siebert, Gerd, 4,331,449, Cl. 48-197.00R.
Metzger, Hubert, to Printing Machinery & Electronics, Inc. Rotogravure cylinder plating apparatus. 4,331,527, Cl. 204-212.000.
Meyer, Kenneth E.: *See*—
Laux, David E.; and Meyer, Kenneth E., 4,331,907, Cl. 315-400.000.
Mezger, Manfred: *See*—
Sohner, Gerhard; and Mezger, Manfred, 4,331,122, Cl. 123-595.000.
Michalska, Tamara M.; and Stahl, Robert M., to Midland-Ross Corporation. Rotary heat exchanger. 4,331,198, Cl. 165-9.000.

Michelfelder, Sigfrid, to L. & C. Steinmuller GmbH. Method of dry scrubbing reaction products resulting from flame burning. 4,331,638, Cl. 423-210.000.

Microseal Corporation: *See*—
Bramley, Richard G.; and Anderson, Thomas P., Jr., 4,330,980, Cl. 53-473.000.

Middelmann, Heinz: *See*—
Schippers, Heinz; Rehn, Karl-Heinz; Weber, Klaus; Middelmann, Heinz; and Schulte, Karl-Heinz, 4,330,987, Cl. 57-1.00R.

Midland-Ross Corporation: *See*—
Michalska, Tamara M.; and Stahl, Robert M., 4,331,198, Cl. 165-9.000.

Midrex Corporation: *See*—
Scarlett, John C.; and Sanzenbacher, Charles W., 4,331,470, Cl. 75-35.000.

Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Competitive immunoassay using silver halide fogging agent. 4,331,444, Cl. 23-230.00B.

Mikelsons, Valdis; and Nelson, Owen L., to Minnesota Mining and Manufacturing Company. Method for providing an electrical charge pattern on the insulative layer of an insulative layer-photoconductive layer-conductive layer structure. 4,331,753, Cl. 430-55.000.

Miles Laboratories, Inc.: *See*—
Bocuslaski, Robert C.; Burd, John F.; and Carrico, Robert J., 4,331,590, Cl. 260-112.00B.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,331,808, Cl. 544-234.000.
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., 4,331,688, Cl. 424-331.000.

Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., to Shop-Vac Corporation. Noise reducing blower motor housing means for vacuum cleaner, or the like. 4,330,899, Cl. 15-326.000.

Miller, Stanley J.; Jensen, James W.; and Heniser, Richard J., to Gulf & Western Manufacturing Company. Can beading apparatus. 4,331,014, Cl. 72-93.000.

Miller, William A.: *See*—
Chung, Daniel C.; Miller, William A.; and Baumgaertner, Eugene R., 4,331,619, Cl. 264-13.000.

Miller, William E.: *See*—
United States of America, National Aeronautics and Space Administration; Miller, William E.; Sher, Arden; and Tsuo, Yuan H., 4,331,873, Cl. 250-330.000.

Miller, William H., Jr., to Mechanical Technology Incorporated. Nested Belleville spring support for compliant thrust bearings. 4,331,365, Cl. 308-9.000.

Milliken Research Corporation: *See*—
Eschenbach, Paul W., 4,330,988, Cl. 57-6.000.
Su, Tien-Kuei, 4,331,724, Cl. 428-91.000.

Minagawa, Takashi: *See*—
Nakazawa, Tamotsu; Ina, Kenzo; and Minagawa, Takashi, 4,332,014, Cl. 364-900.000.

Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Programmable frequency divider. 4,331,926, Cl. 328-48.000.

Minami, Yasuo, to Sharp Kabushiki Kaisha. Electrochromic display cell. 4,331,386, Cl. 350-357.000.

Minchev, Pavel M.; Hristov, Hristomir D.; Lazarov, Stoyan R.; Balinov, Stoimen S.; and Yordanov, Nikolay V., to Institute po Metaloznanie i Technologia na Metalite. Apparatus for soldering the coil of an electric machine to its collector. 4,331,279, Cl. 228-37.000.

Minetti-Mezetti, Enrica: *See*—
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.

Minnesota Mining and Manufacturing Company: *See*—
Dau, Donald E.; and Nelson, Leonard E., 4,331,453, Cl. 51-298.000.
Mikelsons, Valdis; and Nelson, Owen L., 4,331,753, Cl. 430-55.000.
Samudrala, Rama P., 4,331,705, Cl. 427-54.100.
Throckmorton, James R., 4,331,817, Cl. 564-430.000.

Minning, Charles P.: *See*—
Basiulis, Algerd; and Minning, Charles P., 4,331,200, Cl. 165-104.220.

Minnis, Ralph L.: *See*—
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., 4,331,719, Cl. 427-393.500.

Minolta Camera Kabushiki Kaisha: *See*—
Tanaka, Susumu; and Oka, Tateki, 4,331,757, Cl. 430-122.000.

Mirabel, Bernard; and Rollin, Claude, to Rhone-Poulenc Industries. Ion exchange purification of sugar beet juice. 4,331,483, Cl. 127-46.200.

Mirkovich, Joyce M.: *See*—
Mirkovich, Konstantin; and Mirkovich, Joyce M., 4,331,329, Cl. 272-65.000.

Mirkovich, Konstantin; and Mirkovich, Joyce M. Rebound exerciser. 4,331,329, Cl. 272-65.000.

Mirra, Michael J.; and Giles, Albert H., to Ball Corporation. Conductive coatings for metal substrates. 4,331,487, Cl. 148-6.15R.

Misaki, Hideo: *See*—
Matsumura, Eiji; Ishikawa, Hidehiko; and Misaki, Hideo, 4,331,763, Cl. 435-190.000.

Miskin, Leslie; Schenstrom, Mauritz F.; and Kunz, Detlev, to ITT Industries, Inc. Monolithic integrated circuit for a digital-to-analog converter. 4,331,892, Cl. 307-448.000.

Mitry, Samah A.: *See*—
Broadwater, Ronald L.; Haynes, Russell R.; and Mitry, Samah A., 4,331,154, Cl. 128-677.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujino, Junichi; Miyazaki, Hideto; and Ikehata, Shigeki, 4,331,906, Cl. 315-368.000.
Matsunaga, Makoto; and Mizobuchi, Akihito, 4,331,942, Cl. 333-161.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Seike, Takashi; and Kobayashi, Takehiko, 4,331,731, Cl. 428-305.500.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Imai, Hiroto; and Hoshino, Noriyuki, 4,331,053, Cl. 83-174.000.
Kawamura, Tomozuchi; Haneda, Hisao; and Araoka, Mamoru, 4,331,105, Cl. 122-406.00S.

Mitsubishi Paper Mills, Ltd.: *See*—
Miyama, Masao; and Kusama, You, 4,331,508, Cl. 162-135.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Ikeda, Minoru; Yoshioka, Teruhiko; and Inoue, Kazutaka, 4,331,824, Cl. 585-638.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Kawamoto, Keiji; and Yoshioka, Toshihiro, 4,331,608, Cl. 260-406.000.
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,331,561, Cl. 252-429.00B.

Mitsui Toatsu Chemicals, Inc.: *See*—
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, 4,331,451, Cl. 48-214.00A.

Mitsumi Electric Co., Ltd.: *See*—
Naoi, Mitsuaki, 4,331,038, Cl. 74-10.330.

Mitter, Mathias. Dot printer. 4,331,010, Cl. 68-200.000.

Miura, Kiyoshi: *See*—
Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, 4,331,752, Cl. 430-28.000.

Miwa, Tadahisa: *See*—
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.

Mixan, Craig E.: *See*—
Werner, John A.; Wilson, Charles A.; and Mixan, Craig E., 4,331,811, Cl. 546-345.000.

Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Master cylinder apparatus. 4,330,995, Cl. 60-562.000.

Miyama, Masao; and Kusama, You, to Mitsubishi Paper Mills, Ltd. Photographic support. 4,331,508, Cl. 162-135.000.

Miyawaki, Masao: *See*—
Hongo, Yasuo; Tuzuki, Yoshinori; and Miyawaki, Masao, 4,331,773, Cl. 501-128.000.

Miyazaki, Hideto: *See*—
Fujino, Junichi; Miyazaki, Hideto; and Ikehata, Shigeki, 4,331,906, Cl. 315-368.000.

Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, to Kitachi, Ltd. Method for pressure bonding metal members by utilizing eutectic reaction. 4,331,286, Cl. 228-198.000.

Miyazako, Takushi: *See*—
Mihara, Yuji; Masuda, Nobuhito; Hiratsuka, Nobuo; Miyazako, Takushi; and Hirano, Shigeo, 4,331,444, Cl. 23-230.00B.

Mizobuchi, Akihito: *See*—
Matsunaga, Makoto; and Mizobuchi, Akihito, 4,331,942, Cl. 333-161.000.

Mlot-Fijalkowski, Adolf, to Magnaflux Corporation. Dual-purpose penetrant system. 4,331,027, Cl. 73-104.000.

Mobil Oil Corporation: *See*—
Frangatos, Gerassimos, 4,331,546, Cl. 252-49.900.
Rubin, Mae K.; and Rosinski, Edward J., 4,331,643, Cl. 423-329.000.
Wilson, Peggy M.; and Pao, Julie, 4,331,543, Cl. 252-8.55D.

Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, to Ricoh Company, Ltd. Magnetic brush development apparatus. 4,331,100, Cl. 118-657.000.

ModuTank, Inc.: *See*—
Carren, Thomas G.; and Etkes, Asher B., 4,331,252, Cl. 220-5.00A.

Moe, Erik, to Storage Technology Corporation. Information storage device and method of forming same. 4,331,966, Cl. 346-137.000.

Moerk, John C., Jr.: *See*—
Czernik, Daniel E.; and Moerk, John C., Jr., 4,331,336, Cl. 277-1.000.

Molinari, Egidio: *See*—
Bonaldi, Antonio; and Molinari, Egidio, 4,331,607, Cl. 260-397.100.

Molins Limited: *See*—
Blackall, Victor G.; and Daisley, Robert T., 4,330,976, Cl. 53-151.000.
Farrar, David J.; Beck, Ralph W.; Preston, Edward G.; and Williams, Robert E., 4,331,165, Cl. 131-281.000.

Moller, Friedrich W.: *See*—
Jockel, Heinz; Moller, Friedrich W.; Renner, Hans J.; and Siebert, Gerd, 4,331,449, Cl. 48-197.00R.

Moller, Jens T. T., to Ten Cate Sports B.V. Composite wind surfboard. 4,331,093, Cl. 114-39.000.

Monarch Marking Systems, Inc.: *See*—
Ivary, David J.; and Kirby, Raymond L., Jr., 4,331,302, Cl. 242-71.900.

Monsanto Company: *See*—
Palethorpe, George, 4,331,732, Cl. 428-372.000.

Montedison S.p.A.: *See*—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,331,561, Cl. 252-429.00B.

Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Nitrile and uses of same in perfumes, colognes and perfumed articles. 4,331,611, Cl. 260-464.000.

Moore, Paul J., to J. E. Love Company. Floating divider for a harvester. 4,330,983, Cl. 56-314.000.

Moppett, Charles E.: *See*—
Armstrong, William W.; Moppett, Charles E.; and Windisch, Wendell W., 4,331,599, Cl. 260-245.20R.

Morehouse, James H.; and Swenson, Mark A., to Storage Technology Corporation. Head actuator for magnetic disk drive. 4,331,991, Cl. 360-106.000.

Morgando, John P. Method and apparatus for teaching musical instruments. 4,331,061, Cl. 84-470.00R.

Mori, Masaharu: *See*—
Amazawa, Kiyoshi; Mori, Masaharu; and Taniyama, Takashi, 4,331,885, Cl. 307-254.000.

Mori, Masahito, to Hitachi, Ltd. Apparatus and method for magnetic tape drive control. 4,331,986, Cl. 360-71.000.

Mori, Tohru: *See*—
Nakajima, Takao; Terada, Masafumi; and Mori, Tohru, 4,331,767, Cl. 435-288.000.

Morimoto, Shigeo: *See*—
Watanabe, Yoshiaki; Morimoto, Shigeo; and Omura, Sadafumi, 4,331,803, Cl. 536-7.200.

Morita, Tomijiro; Takaiwa, Masakazu; and Matsuda, Toshiharu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for removing sulfur dioxide from an exhaust gas containing the same. 4,331,640, Cl. 423-242.000.

Morley, Richard M.; Multani, Jagir S.; and Sandhu, J. S., to General Instrument Corp. Electrically alterable read only memory semiconductor device made by low pressure chemical vapor deposition process. 4,330,930, Cl. 29-571.000.

Morner, Bengt O. J. S., to SAB Industri AB. Device preferably for driers for compressed air. 4,331,457, Cl. 55-163.000.

Morris, Hayden; and Bis, Richard F., to United States of America, Navy. Process for preparing isolated junctions in thin-film semiconductors utilizing shadow masked deposition to form graded-side mesas. 4,330,932, Cl. 29-579.000.

Morris, Robert M., to Eli Lilly and Company. Magnetically-localizable, biodegradable lipid microspheres. 4,331,654, Cl. 424-38.000.

M[illegible]on, Clyde A.; and Leavitt, Richard P., to United States of Amer[illegible], Army. Cerenkov submillimeter electromagnetic wave oscillator. 4,331,934, Cl. 331-79.000.

Morse, William F.: *See*—
Hong, Charles C.; Price, David E.; and Morse, William F., 4,331,129, Cl. 126-427.000.

Moss, Elvis W., to Brunswick Corporation. Two part front cover for spin cast reels. 4,331,303, Cl. 242-84.20A.

Mostek Corporation: *See*—
Gerson, I. Steve, 4,332,009, Cl. 364-200.000.
Gosney, William M., Jr.; and McKenny, Vernon G., 4,331,968, Cl. 357-23.000.

Motosugi, Kenzo: *See*—
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

Moulton, Gary A.: *See*—
Poovaiah, Bachettira W.; and Moulton, Gary A., 4,331,691, Cl. 426-302.000.

Mta Kozponti Fizikai Kutato Intezete: *See*—
Eisler, Gyula, 4,331,384, Cl. 350-321.000.

Mukasa, Shizuo, to Olympus Optical Company Ltd. Angioscope. 4,331,132, Cl. 128-6.000.

Muller, Roman, to Gebrueder Buehler AG. Degerming of maize. 4,331,072, Cl. 99-606.000.

Muller, Werner; and Steingroever, Erich A., to Magnetfabrik Bonn GmbH. Electrographic copying device with magnetic cylinder. 4,331,101, Cl. 118-658.000.

Multani, Jagir S.: *See*—
Morley, Richard M.; Multani, Jagir S.; and Sandhu, J. S., 4,330,930, Cl. 29-571.000.

Multinorm B.V.: *See*—
Vissers, Hermanus H.; and Oosterling, Pieter A., 4,330,982, Cl. 56-192.000.

Mumford, George V., to Owens-Illinois, Inc. One piece child-resistant closure. 4,331,247, Cl. 215-216.000.

Mundus, Friedhelm: *See*—
Achelpohl, Fritz; and Mundus, Friedhelm, 4,331,502, Cl. 156-515.000.

Murai, Yasushi: *See*—
Makabe, Osamu; Murai, Yasushi; Okonogi, Tuneo; Onodera, Masahiro; Yoshida, Takashi; and Fukatsu, Shunzo, 4,331,597, Cl. 260-239.100.

Murakami, Hiroyasu: *See*—
Kiuchi, Masayoshi; Kawamura, Masaharu; Yamada, Masanori; and Murakami, Hiroyasu, 4,331,406, Cl. 354-128.000.

Murasaki, Ryuichi, to Yoshida Kogyo K.K. Selvage-knitting needle mechanism for use in a shuttleless loom. 4,331,181, Cl. 139-431.000.

Murata, Toshiaki: *See*—
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.

Muroi, Kishiro: *See*—
Yazawa, Yasuhiro; and Muroi, Kishiro, 4,331,353, Cl. 292-28.000.

Murphy, Edward J.: *See*—
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., 4,331,719, Cl. 427-393.500.

Murphy, Preston V.; and Hubschi, Kurt, to Lectret S.A. Electret transducer with tapered acoustic chamber. 4,331,840, Cl. 179-111.00E.

Murti, Tangirala R.: *See*—
Scheit, Karl H.; Reddy, Ergam R. S. P.; Murti, Tangirala R.; Pandit, Madhusudan W.; and Bhargava, Pushpa M., 4,331,764, Cl. 435-199.000.

Muruska, H. Paul; Sansregret Joseph L.; and Young, Archie R., to Exxon Research & Engineering Co. Process for thin film deposition of cadmium sulfide. 4,331,707, Cl. 427-74.000.

Myers, Charles E., Jr.; Doroshow, James H.; and Locker, Gershon Y., to United States of America, Health and Human Services. N-Acetylcysteine protects against cardiac damage from subsequently-administered cardio-toxic anthra-cycline in cancer therapy. 4,331,648, Cl. 424-10.000.

Myhr, Lars H., to All American Engineering Company. Programmed aircraft arresting system. 4,331,309, Cl. 244-110.00A.

Mysicka, James C.; Stern, Ralph C.; and Augustine, Robert J., to Sunbeam Corporation. Coffeemaker. 4,331,067, Cl. 99-305.000.

Nagata, Kazuhiko: *See*—
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

Nagatani, Kuniaki: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.

Nakagawa, Yasushi: *See*—
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, 4,331,120, Cl. 123-519.000.

Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, to Unitika Ltd. *Bacillus stearothermophilus* strain UK 788 and process for producing a useful enzyme. 4,331,762, Cl. 435-190.000.

Nakajima, Takao; Terada, Masafumi; and Mori, Tohru, to Fujisawa Pharmaceutical Co., Ltd. Immobilized enzyme column. 4,331,767, Cl. 435-288.000.

Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, to Olympus Optical Company Limited. Apparatus for detecting an in-focused condition of optical systems. 4,331,864, Cl. 250-204.000.

Nakano, Tatsuo: *See*—
Ukita, Kenkichi; Nakano, Tatsuo; and Kishi, Ikuji, 4,331,795, Cl. 526-273.000.

Nakano, Toshio: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.

Nakao, Masami: *See*—
Tadokoro, Tomoo; Nakao, Masami; and Akagi, Toshimichi, 4,331,113, Cl. 123-198.00F.

Nakayama, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Refrigerant compressor. 4,330,999, Cl. 62-217.000.

Nakazawa, Tamotsu; Ina, Kenzo; and Minagawa, Takashi, to Canon Kabushiki Kaisha. Data retrieval system. 4,332,014, Cl. 364-900.000.

Nalco Chemical Company: *See*—
Goretta, Louis A.; and Otremba, Robert R., 4,331,792, Cl. 526-229.000.

Nannini, Giuliano; Perrone, Ettore; Casabuona, Ferruccio; and Grasso, Silvio, to Farmitalia Carlo Erba S.p.A. 3-[(8-Carboxy-6-tetrazolo[1,5-b]pyridazinyl)-thiomethyl]-7-[2-(2-amino-4-thiazolyl)-2-methoxyimino-acetamido]-3-cephem-4-carboxylic acid. 4,331,666, Cl. 424-246.000.

Naoi, Mitsuaki, to Mitsumi Electric Co., Ltd. Push-button type tuner apparatus. 4,331,038, Cl. 74-10.330.

Naotsuka, Hideo: *See*—
Akiyama, Hiroshi; and Naotsuka, Hideo, 4,331,541, Cl. 210-679.000.

Narasimhan, Mandayam C., to Allied Corporation. Amorphous metallic strips. 4,331,739, Cl. 428-544.000.

Naruse, Seiji; and Maeda, Fumiaki, to Lion Corporation. Clamp lift truck. 4,331,320, Cl. 254-2.00R.

National Distillers & Chemical Corp.: *See*—
Hinnenkamp, James A.; and Walatka, Vernon V., Jr., 4,331,641, Cl. 423-277.000.

National Semiconductor Corporation: *See*—
Burns, Carmen D., 4,331,740, Cl. 428-572.000.

Nauerth, Karl-Heinz: *See*—
Roller, Hanno; Nauerth, Karl-Heinz; and Kitt, Rudi, 4,331,860, Cl. 219-544.000.

Naumann, Klaus: *See*—
Schubart, Rudiger; Klauke, Erich; Naumann, Klaus; and Fuchs, Rainer, 4,331,821, Cl. 570-196.000.

Neff, Leslie A. Log cutting device. 4,331,052, Cl. 83-155.000.

Negi, Shigeto: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.

Neipert, Marshall P.: *See*—
Skach, Edward J., Jr.; and Neipert, Marshall P., 4,331,711, Cl. 427-180.000.

Nelson, Leonard E.: *See*—
Dau, Donald E.; and Nelson, Leonard E., 4,331,453, Cl. 51-298.000.

Nelson, Owen L.: *See*—
Mikelsons, Valdis; and Nelson, Owen L., 4,331,753, Cl. 430-55.000.
Neumann, Leopold, to Siemens Aktiengesellschaft. Device for gating a blanking bar into a recording of analog signals. 4,331,962, Cl. 346-33.0ME.
New Brunswick Scientific Co., Inc.: *See*—
Snyder, Philip; and Freedman, David, 4,331,262, Cl. 222-37.000.
Newell, Chester W.: *See*—
Pfost, R. Fred; and Newell, Chester W., 4,331,993, Cl. 360-137.000.
Newell Research Corporation: *See*—
Pfost, R. Fred; and Newell, Chester W., 4,331,993, Cl. 360-137.000.
NGK Spark Plug Co., Ltd.: *See*—
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,331,627, Cl. 264-332.000.
Niccolls, Paul L. Basting injector and control means. 4,331,071, Cl. 99-532.000.
Nicolas, Maurice: *See*—
Duchateau, Jacques; and Nicolas, Maurice, 4,331,494, Cl. 156-87.000.
Nighan, William L.: *See*—
Brown, Robert T.; and Nighan, William L., 4,331,937, Cl. 372-74.000.
Nihei, Takahiro, to Olympus Optical Co., Ltd. Single-lens reflex camera. 4,331,402, Cl. 354-59.000.
Nihon Tokushurozai Kabushiki Kaisha: *See*—
Hongo, Yasuo; Tuzuki, Yoshinori; and Miyawaki, Masao, 4,331,773, Cl. 501-128.000.
Nippon Denso Kabushiki Kaisha: *See*—
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, 4,331,120, Cl. 123-519.000.
Nippon Electric Co., Ltd.: *See*—
Kubo, Yoshimi; and Igarashi, Hitoshi, 4,331,477, Cl. 75-228.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Yokoyama, Kenji, 4,331,929, Cl. 330-254.000.
Nippon Petrochemicals Co., Ltd.: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,331,569, Cl. 252-522.00R.
Yazawa, Masahide; Yazawa, Hiroshi; Tani, Haruhisa; and Kurihara, Kazuhiko, 4,331,624, Cl. 264-160.000.
Nippon Soken, Inc.: *See*—
Nishida, Minoru; Hattori, Tadashi; and Tanaka, Akira, 4,331,899, Cl. 313-141.000.
Nippon Steel Corporation: *See*—
Ohashi, Tetsuro; Okamoto, Masafumi; and Fujii, Hiromu, 4,331,196, Cl. 164-468.000.
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.
Nippon Telegraph & Telephone Public Corp.: *See*—
Kurumada, Katsuhiko; Asai, Kazuyoshi; and Ishii, Yasunobu, 4,331,967, Cl. 357-3.000.
Nippondenso Co., Ltd.: *See*—
Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, 4,331,317, Cl. 251-139.000.
Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, 4,331,318, Cl. 251-139.000.
Nishida, Minoru; Hattori, Tadashi; and Tanaka, Akira, to Nippon Soken, Inc. Spark plug. 4,331,899, Cl. 313-141.000.
Nishikawa, Masumi, to Aisin Seiki Kabushiki Kaisha. Doorbelt molding. 4,330,959, Cl. 49-377.000.
Nishikuri, Masao; Yamazaki, Michio; Kojima, Kiyoteru; Seino, Junzaburo; and Kenmochi, Hirohito, to Sumitomo Chemical Company, Limited. Styryl compounds and coloring synthetic resins therewith. 4,331,584, Cl. 524-206.000.
Nishioka, Shinichi: *See*—
Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, 4,331,317, Cl. 251-139.000.
Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, 4,331,318, Cl. 251-139.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, to Ishihara Sangyo Kaisha, Ltd. Pyridylanilines. 4,331,670, Cl. 424-263.000.
Nishizawa, Jun-ichi; and Shiota, Ikuo, to Zaidan Hojin Handotai Kenkyu Shinkokai. Oxynitride film and its manufacturing method. 4,331,737, Cl. 428-457.000.
Nishizawa, Masahiro: *See*—
Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, 4,331,752, Cl. 430-28.000.
Nissan Motor Company, Limited: *See*—
Funahashi, Jun, 4,331,349, Cl. 280-801.000.
Matsuoka, Hideoki; and Yamamoto, Yoshimi, 4,331,304, Cl. 242-107.40A.
Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, 4,332,012, Cl. 364-468.000.
Yamaguchi, Noboru; and Wakasugi, Hideaki, 4,332,002, Cl. 361-432.000.
Nitobe, Mitsuhiro: *See*—
Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, 4,331,897, Cl. 310-234.000.
Nitto Kohki Co., Ltd.: *See*—
Makishima, Reichi, 4,331,177, Cl. 137-556.000.
Noble, Andrew F.: *See*—
Shaw, Peter M.; and Noble, Andrew F., 4,331,491, Cl. 156-64.000.
Noel, Brian F., to Voyager Marine Products, Inc. Hasp retaining device. 4,331,356, Cl. 292-281.000.
Noerholm, Olav, to Aktieselkabet Laur. Knudsen Nordisk Electricitets. Electric safety fuse. 4,331,947, Cl. 337-159.000.
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, to Eisai Co., Ltd. N-(Substituted chromone-3-carbonyl)-phenylglycine derivatives. 4,331,606, Cl. 549-402.000.
Nomura, Haruo. Medical treatment glasses. 4,331,163, Cl. 128-793.000.
Norfab Corporation: *See*—
Weber, John W., 4,331,729, Cl. 428-252.000.
Nortman, Jeffrey: *See*—
Gibstein, Edward; and Nortman, Jeffrey, 4,332,007, Cl. 362-200.000.
Norton Company: *See*—
Washburn, Malcolm E., 4,331,771, Cl. 501-97.000.
Notelteirs, Victor R.; and Siaens, Gustaaf F. R., to U.S. Philips Corporation. Halogen incandescent lamp. 4,331,900, Cl. 313-222.000.
Novi, Sam. Earthquake shut-off valve for gas line. 4,331,171, Cl. 137-45.000.
Nowacki, Ulrich G., to International Paper Company. Method and apparatus for erecting a carton. 4,331,435, Cl. 493-178.000.
Nowaczyk, Philip J., to Zenith Radio Corporation. Voltage regulator-/active filter for television receiver. 4,331,978, Cl. 358-190.000.
Nowaczyk, Philip J.: *See*—
Cohn, William E.; and Nowaczyk, Philip J., 4,331,977, Cl. 358-188.000.
Nozaki, Takao; and Ito, Takashi, to Fujitsu Limited. Method of forming an insulation film on semiconductor device surface. 4,331,710, Cl. 427-94.000.
Nozawa, Reikichi. Liquefied natural gas-freon electricity generation system. 4,330,998, Cl. 60-655.000.
Nu-View Pty. Ltd.: *See*—
Thompson, Robert L.; and Scotcher, Douglas E., 4,330,898, Cl. 15-250.320.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Exposure control system for a photographic camera. 4,331,401, Cl. 354-37.000.
Nyman, Bengt E., to Mangum-Sickles Industries, Inc. Camera providing aperture masking and ground glass reticle masking. 4,331,396, Cl. 352-85.000.
Nyul, Paul: *See*—
Limm, Albert C.; O'Brien, James T.; Colgrove, Thomas V.; and Nyul, Paul, 4,331,938, Cl. 372-50.000.
Obata, Kazunori: *See*—
Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, 4,332,012, Cl. 364-468.000.
Oberpichler, Gerd: *See*—
Piech, Ferdinand; Dorpmund, Heinz; Oberpichler, Gerd; Honig, Ernst-August; and Schmidt, Dieter, 4,331,045, Cl. 74-867.000.
O'Brien, James T.: *See*—
Limm, Albert C.; O'Brien, James T.; Colgrove, Thomas V.; and Nyul, Paul, 4,331,938, Cl. 372-50.000.
O'Brien, Joseph P.: *See*—
Papay, Andrew G.; and O'Brien, Joseph P., 4,331,545, Cl. 252-49.600.
Occidental Research Corporation: *See*—
Qader, Shaik A., 4,331,530, Cl. 208-10.000.
Ochiai, Izumi: *See*—
Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, 4,331,286, Cl. 228-198.000.
Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, 4,331,280, Cl. 228-112.000.
Ochiai, Koichi, to Yoshida Kogyo K.K. Velvet type fastener tape and method of producing the same. 4,330,907, Cl. 24-204.000.
O'Connor, Paul B.: *See*—
Fleming, James W., Jr.; MacChesney, John B.; and O'Connor, Paul B., 4,331,462, Cl. 65-3.120.
Octa, Inc.: *See*—
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,330,897, Cl. 15-246.000.
Oda, Yasutaka; and Hamaoka, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Self-compensating device for a magnetic disc apparatus. 4,331,987, Cl. 360-78.000.
Oestreich, Ulrich; Zeidler, Gunter; and Schober, Gernot, to Siemens Aktiengesellschaft. Optical cable with thixotropic filling compound. 4,331,379, Cl. 350-96.230.
Oettinger, John F., to ESCO Corporation. Digester strainer locking assembly. 4,331,509, Cl. 162-251.000.
Ogasawara, Makoto: *See*—
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,331,800, Cl. 528-289.000.
Kudo, Akira; Inata, Hiroo; and Ogasawara, Makoto, 4,331,697, Cl. 427-2.000.
Ogawa, Kiyoshi: *See*—
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.
Ogawa, Ryota; and Takahashi, Yasuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compact zoom lens system. 4,331,389, Cl. 350-427.000.
Ogren, Sven O.: *See*—
Lindberg, Ulf H. A.; Ross, Svante B.; Thorberg, Seth-Olov; and Ogren, Sven O., 4,331,684, Cl. 424-311.000.
Ohashi, Tetsuro; Okamoto, Masafumi; and Fujii, Hiromu, to Nippon Steel Corporation. Process for producing non-directional electrical steel sheets free from ridging. 4,331,196, Cl. 164-468.000.

Ohi Seisakusho Co. Ltd.: *See*—
Yazawa, Yasuhiro; and Muroi, Kishiro, 4,331,353, Cl. 292-28.000.
Ohno, Kunio, to Olympus Optical Co., Ltd. Photographing apparatus for endoscope. 4,331,403, Cl. 354-62.000.
Oka, Tateki: *See*—
Tanaka, Susumu; and Oka, Tateki, 4,331,757, Cl. 430-122.000.
Okada, Hisafumi: *See*—
Takenaka, Shigeo; and Okada, Hisafumi, 4,331,903, Cl. 313-413.000.
Okajima, Hiroyuki: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.
Okamoto, Masafumi: *See*—
Ohashi, Tetsuro; Okamoto, Masafumi; and Fujii, Hiromu, 4,331,196, Cl. 164-468.000.
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, to Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Sato, Susumu. Pyridazine urea plant growth regulators. 4,331,807, Cl. 544-224.000.
Okamura, Yasushi; and Tanaka, Kiichiro, to Matsushita Electric Industrial Co., Ltd. Stationary record player. 4,332,023, Cl. 369-177.000.
Okoma Maschinenfabrik GmbH: *See*—
Buttner, Kurt, 4,331,191, Cl. 144-3.00R.
Okonogi, Tuneo: *See*—
Makabe, Osamu; Murai, Yasushi; Okonogi, Tuneo; Onodera, Masahiro; Yoshida, Takashi; and Fukatsu, Shunzo, 4,331,597, Cl. 260-239.100.
Okuno, Toyoji, to Sugatsune Industrial Co., Ltd. Temporary locking device. 4,331,355, Cl. 292-251.500.
Olander, Karl E., to Alfa-Laval AB. Flow indicator for milking system. 4,331,102, Cl. 119-14.080.
Olapinski, Hans: *See*—
Dworak, Ulf; and Olapinski, Hans, 4,331,048, Cl. 82-1.00C.
Old, Robert L., Jr.: *See*—
Chelcun, Darrell N.; Dougherty, Roderick J., Jr.; Belau, Kenneth P.; and Old, Robert L., Jr., 4,332,013, Cl. 364-505.000.
Olsson, Sven G.: *See*—
Dahlstrom, Bo; and Olsson, Sven G., 4,331,963, Cl. 346-62.000.
Olszewski, Egon: *See*—
Benteler, Hubertus; Streubel, Wolfgang; and Olszewski, Egon, 4,331,015, Cl. 72-133.000.
Benteler, Hubertus; Streubel, Wolfgang; and Olszewski, Egon, 4,331,016, Cl. 72-133.000.
Olympus Optical Co., Ltd.: *See*—
Furuta, Kenzi, 4,331,307, Cl. 242-186.000.
Furuta, Kenzi; and Kondo, Makoto, 4,331,308, Cl. 242-191.000.
Mukasa, Shizuo, 4,331,132, Cl. 128-6.000.
Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,331,864, Cl. 250-204.000.
Nihei, Takahiro, 4,331,402, Cl. 354-59.000.
Ohno, Kunio, 4,331,403, Cl. 354-62.000.
Omark Industries, Inc.: *See*—
Gibson, Duane M., 4,331,028, Cl. 73-104.000.
Omori, Norio: *See*—
Kamai, Kenichiro; Omori, Norio; and Nishioka, Shinichi, 4,331,317, Cl. 251-139.000.
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Omura, Sadafumi: *See*—
Watanabe, Yoshiaki; Morimoto, Shigeo; and Omura, Sadafumi, 4,331,803, Cl. 536-7.200.
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Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, to Teijin Petrochemical Industries Ltd. Isomerization of xylene. 4,331,822, Cl. 585-482.000.
Oosterling, Pieter A.: *See*—
Vissers, Hermanus H.; and Oosterling, Pieter A., 4,330,982, Cl. 56-192.000.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,331,672, Cl. 424-263.000.
Optenhovel, Bernd: *See*—
Ebbinghaus, Walter; Weisbrodt, Norbert; Optenhovel, Bernd; and Wennel, Heinz, 4,331,377, Cl. 339-272.00A.
Orchard, Anthony, to Avnet, Inc. Phonograph tone arm with counterweight and method of use. 4,332,024, Cl. 369-254.000.
Ord, Robinson, Jr., to Mapco, Inc. Methods of measuring fluid viscosity and flow rate. 4,331,025, Cl. 73-54.000.
Orii, Akira: *See*—
Makino, Yoshimitsu; and Orii, Akira, 4,331,890, Cl. 307-326.000.
Orndorff, Roy L., Jr., to B. F. Goodrich Company, The. Bearing assembly and method for making same. 4,331,496, Cl. 156-187.000.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See*—
Chisholm, Raymond S.; and Holmstrom, Bjorn, 4,331,521, Cl. 204-98.000.
Orr, Thomas V., to Procter & Gamble Company, The. Antiperspirant composition. 4,331,609, Cl. 260-448.00R.
Ortal, Raymond, to Societe STENDHAL S.A. Package for cosmetics and perfumes. 4,331,239, Cl. 206-581.000.
Ortho Pharmaceutical Corporation: *See*—
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,331,595, Cl. 260-112.50R.
Osaka Oxygen Industries, Ltd.: *See*—
Sato, Toru, 4,331,455, Cl. 55-21.000.
Osby, Warren J.: *See*—
Willenbring, Armer J.; Osby, Warren J.; and Strunc, Gerald R., 4,330,978, Cl. 53-435.000.
Otremba, Robert R.: *See*—
Goretta, Louis A.; and Otremba, Robert R., 4,331,792, Cl. 526-229.000.
Otsuka, Nobuyuki: *See*—
Hirai, Seiichi; and Otsuka, Nobuyuki, 4,331,005, Cl. 464-145.000.
Outboard Marine Corporation: *See*—
Blanchard, Clarence E., 4,331,432, Cl. 440-75.000.
Outokumpu Oy: *See*—
Kunttu, Kalevi J.; Lilja, Launo L.; and Makitalo, Valto J., 4,331,087, Cl. 110-264.000.
Owen, Daniel V., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 4,331,905, Cl. 315-225.000.
Owens-Illinois, Inc.: *See*—
Mumford, George V., 4,331,247, Cl. 215-216.000.
Oxenreider, Terry R.: *See*—
Urban, Todd A.; and Oxenreider, Terry R., 4,331,325, Cl. 269-43.000.
Ozawa, Keiji: *See*—
Kinjo, Hisao; and Ozawa, Keiji, 4,331,976, Cl. 358-128.600.
Packo Industries, Inc.: *See*—
Packo, Joseph J.; and Bailey, Donald L., 4,331,722, Cl. 428-35.000.
Packo, Joseph J.; and Bailey, Donald L., to Packo Industries, Inc. Sealing leaks by polymerization of volatilized organosilane monomers. 4,331,722, Cl. 428-35.000.
Pagay, Roger; and Tavernier, Georges, to Societe Nouvelle Baele-Gangloff Societe Anonyme. Method of and apparatus for wrapping tops of bottles with foil. 4,331,498, Cl. 156-256.000.
Page, Donald F.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,331,672, Cl. 424-263.000.
Pai, Panemangalore S., to BASF Wyandotte Corporation. Process for eliminating free formaldehyde in textile materials treated with dimethylolated carbamates. 4,331,438, Cl. 8-187.000.
Pako Corporation: *See*—
Euteneuer, Charles L.; and Willenbring, Armer J., 4,331,260, Cl. 221-19.000.
Willenbring, Armer J.; Osby, Warren J.; and Strunc, Gerald R., 4,330,978, Cl. 53-435.000.
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, to Centro Ricerche Fiat S.p.A.; and Politecnico di Torino. Thermophotovoltaic converter. 4,331,829, Cl. 136-253.000.
Palethorpe, George, to Monsanto Company. Acrylic fibers having improved moisture transport properties. 4,331,732, Cl. 428-372.000.
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., to Imperial Chemical Industries Limited. Ammonium nitrate slurry compositions. 4,331,490, Cl. 149-46.000.
Palmer, Bryan H.: *See*—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,331,680, Cl. 424-303.000.
Pammer, Erich: *See*—
Risch, Lothar; Pammer, Erich; and Friedrich, Karlheinz, 4,331,709, Cl. 427-94.000.
Pandit, Madhusudan W.: *See*—
Scheit, Karl H.; Reddy, Ergam R. S. P.; Murti, Tangirala R.; Pandit, Madhusudan W.; and Bhargava, Pushpa M., 4,331,764, Cl. 435-199.000.
Panin, Vladimir I.: *See*—
Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy, 4,331,241, Cl. 209-589.000.
Pannell, Richard B.: *See*—
Pretzer, Wayne R.; and Pannell, Richard B., 4,331,560, Cl. 252-429.00R.
Panpack A.G.: *See*—
Staar, Marcel J. H., 4,331,264, Cl. 222-94.000.
Pao, Julie: *See*—
Wilson, Peggy M.; and Pao, Julie, 4,331,543, Cl. 252-8.55D.
Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricating compositions containing boronated N-alkanol hydrocarbylamide. 4,331,545, Cl. 252-49.600.
Pargamin, Laurent; and Thuillier, Denis, to Societe Anonyme dite: CERAVER. Insulator comprising a plurality of vulcanized fins and method of manufacture. 4,331,833, Cl. 174-179.000.
Park, Chung P., to Dow Chemical Co., The. Ethylenic polymer foams having improved dimensional stability. 4,331,779, Cl. 521-134.000.
Park, Robert H. Method of equalizing the voltages of the individual cells of storage batteries. 4,331,911, Cl. 320-14.000.
Parker, Leon; and Campman, Arthur R., to Hitco. Three-dimensional thick fabrics and method and apparatus for making same. 4,331,091, Cl. 112-262.100.
Parker, Marshall M.: *See*—
Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., 4,332,027, Cl. 370-94.000.
Parker, Robert K.: *See*—
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.

Parker, Robert P., to RCA Corporation. Linear high gain sampling amplifier. 4,331,981, Cl. 358-243.000.
Parker, Robert P., to RCA Corporation. Sample and hold circuit particularly for small signals. 4,331,982, Cl. 358-243.000.
Parkison, Richard G., to American Standard Inc. Replaceable cartridge valve assembly. 4,331,176, Cl. 137-454.500.
Parrish, William J., to Hughes Aircraft Co. Charge coupled device focal plane integrater. 4,331,889, Cl. 307-311.000.
Partridge, Leslie W., to Burdick Corporation, The. Cardiac amplifier system with low transient fast switching. 4,331,158, Cl. 128-709.000.
Pasler, Horst: *See—*
Dillmann, Hans G.; Furrer, Jurgen; and Pasler, Horst, 4,331,460, Cl. 55-485.000.
Pasquini, Sandro, to SIG Societe Industrielle Suisse Industrieplatz. Railway track tamper. 4,331,082, Cl. 104-12.000.
Patel, Anilbhai S., to Healthdyne, Inc. Patient sensor continuity detector. 4,331,161, Cl. 128-736.000.
Pathfinder Auto Lamp Company: *See—*
Graff, Henry W., 4,331,382, Cl. 350-303.000.
Paul, Volker: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,331,675, Cl. 424-269.000.
Pennwalt Corporation: *See—*
Djurickovic, Slobodan M., 4,331,686, Cl. 424-325.000.
PepsiCo Inc.: *See—*
Risley, Robert F., 4,331,227, Cl. 198-339.000.
Perethian, Charles M.: *See—*
Johnson, Randall K.; Cummings, Kenneth W.; and Perethian, Charles M., 4,331,358, Cl. 296-78.100.
Perfect, Frederick H., to Reading Alloys, Inc., a part interest. Process for aluminothermic production of chromium and chromium alloys low in nitrogen. 4,331,475, Cl. 420-428.000.
Periana-Pillai, Roy A.: *See—*
Renga, James M.; and Periana-Pillai, Roy A., 4,331,604, Cl. 549-230.000.
Perkin-Elmer Corporation, The: *See—*
Bullinger, Henry W.; and Friesel, Clifford L., 4,330,933, Cl. 29-612.000.
Shafer, David R., 4,331,390, Cl. 350-444.000.
Perner, Fred A.; and Provazek, Lionel D., to International Business Machines Corporation. Current switch driving circuit arrangements. 4,331,886, Cl. 307-270.000.
Perrone, Ettore: *See—*
Nannini, Giuliano; Perrone, Ettore; Casabuona, Ferruccio; and Grasso, Silvio, 4,331,666, Cl. 424-246.000.
Perrott, Lynn F., to Corbett, Scott S., Jr. Storage system for cargo container trailers. 4,331,419, Cl. 414-283.000.
Perry, John H.: *See—*
Bax, Ronald F.; and Perry, John H., 4,331,159, Cl. 128-710.000.
Pesa, Frederick A.; and Haase, Thomas A., to Standard Oil Company. Carbonylation of olefinically unsaturated compounds. 4,331,612, Cl. 260-465.400.
Peschke, Jurgen; Mair, Franz; and Zerle, Ludwig, to Erhardt & Leimer KG. Apparatus for flattening and guiding an elongated web. 4,330,909, Cl. 26-75.000.
Pet Incorporated: *See—*
Wagner, Dennis L., 4,331,858, Cl. 219-405.000.
Peters, Donald J.: *See—*
Schwartz, Robert E.; Dinsmore, Harold L.; Peters, Donald J.; and Long, Gary W., 4,331,456, Cl. 55-26.000.
Petersen, Burdette A.: *See—*
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Petersen, Kurt E., to International Business Machines Corporation. Capacitive pressure transducer. 4,332,000, Cl. 361-283.000.
Peterson, Robert R., to Barry Wright Corporation. Flexible coupling. 4,331,003, Cl. 464-76.000.
Petrak, Harry A., to Tenneco, Inc. Live spindle vehicle drive wheel assembly with axially moveable axle. 4,331,210, Cl. 180-70.00R.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,331,554, Cl. 252-344.000.
Pett, Manfred, to Sartorius GmbH. Leakage detecting and detouring filter housing-assembly. 4,331,535, Cl. 210-85.000.
Pfeiffer, Jurgen: *See—*
Bischlipp, Klaus; and Pfeiffer, Jurgen, 4,330,919, Cl. 29-418.000.
Pfeiffer, Robert W.: *See—*
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Pfizer Inc.: *See—*
Armstrong, William W.; Moppett, Charles E.; and Windisch, Wendell W., 4,331,599, Cl. 260-245.20R.
Bax, Ronald F.; and Perry, John H., 4,331,159, Cl. 128-710.000.
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,331,602, Cl. 549-337.000.
Kadin, Saul B., 4,331,683, Cl. 424-309.000.
Pfost, R. Fred; and Newell, Chester W., to Newell Research Corporation. Web cleaning apparatus. 4,331,993, Cl. 360-137.000.
Philip Morris, Incorporated: *See—*
Hale, Robert W., 4,331,166, Cl. 131-331.000.
Phillips, Astrid-Ilsaabe: *See—*
Kammann, Karl P., Jr.; and Phillips, Astrid-Ilsaabe, 4,331,564, Cl. 252-45.000.
Phillips Petroleum Company: *See—*
Banasiak, Dennis S., 4,331,559, Cl. 252-429.00R.
Bjornson, Geir, 4,331,566, Cl. 252-466.00J.
Brady, Donnie G., 4,331,780, Cl. 524-101.000.
Childs, W. Ves; and Coyner, Herbert N., 4,331,024, Cl. 73-35.000.
Drake, Charles A., 4,331,557, Cl. 252-411.00R.
Drake, Charles A., 4,331,562, Cl. 252-438.000.
Hawley, Gil R., 4,331,789, Cl. 526-96.000.
Karbosky, Joseph T.; and Bailey, Dunn M., 4,331,461, Cl. 62-28.000.
McKay, Dwight L., 4,331,563, Cl. 252-455.00Z.
Rohlfing, Raymond G.; Welch, Melvin B.; and Dietz, Richard E., 4,331,791, Cl. 526-125.000.
Van Pool, Joe, 4,331,630, Cl. 422-160.000.
Welch, Melvin B.; and Dietz, Richard E., 4,331,558, Cl. 252-429.00B.
Phillips, Raymond J., to United States of America, Navy. Coaxial termination for cable in-line electronic applications. 4,331,374, Cl. 339-177.00E.
Pickles, Joseph, to Ferro Manufacturing Corporation. 6-Way split bench seat adjuster. 4,331,313, Cl. 248-394.000.
Piech, Ferdinand; Dorpmund, Heinz; Oberpichler, Gerd; Honig, Ernst-August; and Schmidt, Dieter, to Volkswagenwerk Aktiengesellschaft. Pneumatic control system for an automatic vehicle transmission. 4,331,045, Cl. 74-867.000.
Pierini, Giancarlo, to European Atomic Energy Commission (EURATOM). Reprocessing of spent plasma. 4,331,522, Cl. 204-129.000.
Pines, Michael Y.: *See—*
Duncan, James S.; and Pines, Michael Y., 4,331,874, Cl. 250-347.000.
Pioneer Electronic Corporation: *See—*
Sunaga, Yoshimitsu; and Honda, Satoru, 4,331,909, Cl. 318-6.000.
Piontkowski, Ziemowit A. A., deceased: *See—*
Henk, Peter O.; Piontkowski, Ziemowit A. A., deceased; and Carlsen, Christian G., administrator, 4,331,744, Cl. 429-59.000.
Pitney Bowes Inc.: *See—*
Dannatt, Hugh S. L., 4,330,916, Cl. 29-227.000.
Pizzuti, Donato F.: *See—*
Cianci, William J., Jr.; and Pizzuti, Donato F., 4,331,409, Cl. 354-195.000.
Plastech Inc.: *See—*
Marquis, Robert P.; and Weileder, Peter, 4,331,305, Cl. 242-118.110.
Plastics Engineering Company: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,601, Cl. 548-461.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,794, Cl. 526-262.000.
Platone, Edoardo: *See—*
Prevedello, Aldo; and Platone, Edoardo, 4,331,568, Cl. 252-522.00R.
PLM AB: *See—*
Sorensen, Erling, 4,331,246, Cl. 215-1.00C.
Pluequet, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Lubricating arrangement, especially for internal combustion engines. 4,331,112, Cl. 123-196.00S.
Plunkett, Luther C., Jr., to Lanier Business Products, Inc. Dictation system including dictate station identifier and control of access to particular recorders. 4,332,021, Cl. 369-29.000.
Pneumatic Scale Corporation: *See—*
Buschor, Josef, 4,331,434, Cl. 493-67.000.
Pneutek, Inc.: *See—*
Haytayan, Harry M., 4,330,922, Cl. 29-432.000.
Poclain Hydraulics: *See—*
Cheylus, Jean-Francois, 4,331,064, Cl. 92-58.000.
Pohl, Ludwig: *See—*
Eidenschink, Rudolf; Pohl, Ludwig; Romer, Michael; and del Pino, Fernando, 4,331,552, Cl. 252-299.600.
Pokhis, Naum. Arrangement for protection of organs of respiration. 4,331,141, Cl. 128-204.280.
Polaroid Corporation: *See—*
Cianci, William J., Jr.; and Pizzuti, Donato F., 4,331,409, Cl. 354-195.000.
Johnson, Bruce K., 4,331,404, Cl. 354-126.000.
Politecnico di Torino: *See—*
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; Minetti-Mezetti, Enrica; and Ferrari, Giancarlo, 4,331,829, Cl. 136-253.000.
Polska Akademia Nauk, Instytut Katalizy i Fizykochemii Powierzchni: *See—*
Wojciechowski, Jerzy; Haber, Jerzy; Gozdziewicz, Zygmunt; and Lange, Edward, 4,331,693, Cl. 426-419.000.
Polyair Produkt Design Gesellschaft m.b.H.: *See—*
Kubelka, Axel; and Stritzl, Karl, 4,330,949, Cl. 36-117.000.
Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide; Yazawa, Hiroshi; Tani, Haruhisa; and Kurihara, Kazuhiko, 4,331,624, Cl. 264-160.000.
Pompon, Jean-Bernard: *See—*
Arnal, Claude; Fischer, Nicolas; and Pompon, Jean-Bernard, 4,331,788, Cl. 526-91.000.
Poovaiah, Bachettira W.; and Moulton, Gary A., to Washington State University Research Foundation, Inc. Vacuum pressure infiltration process for fresh produce. 4,331,691, Cl. 426-302.000.
Popa, Mihai. Emergency breathing apparatus. 4,331,139, Cl. 128-202.130.
Popp, Karl H.: *See—*
Schenk, Wolfgang; Kothe, Wilfried; and Popp, Karl H., 4,331,539, Cl. 210-620.000.

Pospich, Gunther: *See—*
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Post, Martin F. M.: *See—*
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Pousche, Walter: *See—*
Fleisch, William F.; and Pousche, Walter, 4,330,974, Cl. 52-486.000.
PPG Industries, Inc.: *See—*
Allersma, Ties; and Simpson, James E., 4,331,023, Cl. 73-19.000.
Claassen, George R.; and Ewing, John J., 4,331,464, Cl. 65-273.000.
Hyatt, Charles J., 4,331,273, Cl. 225-2.000.
Rechlicz, Thomas A., 4,331,517, Cl. 204-35.00R.
Presser, Wolfgang: *See—*
Brandes, Siegfried; Gutsch, Uwe; Leithner, Dietrich; and Presser, Wolfgang, 4,332,030, Cl. 376-226.000.
Preston, Edward G.: *See—*
Farrar, David J.; Beck, Ralph W.; Preston, Edward G.; and Williams, Robert E., 4,331,165, Cl. 131-281.000.
Pretzer, Wayne R.; and Pannell, Richard B., to Gulf Research & Development Company. Catalyst and process for preparing organic isocyanates. 4,331,560, Cl. 252-429.00R.
Prevedello, Aldo; and Platone, Edoardo, to Snamprogetti S.p.A. 3,7-Dimethyl-3-hydroxy-6-octenenitrile and process for its preparation. 4,331,568, Cl. 252-522.00R.
Priam Corporation: *See—*
Viskochil, Stephen R., 4,331,989, Cl. 360-97.000.
Price, David E.: *See—*
Hong, Charles C.; Price, David E.; and Morse, William F., 4,331,129, Cl. 126-427.000.
Printing Machinery & Electronics, Inc.: *See—*
Metzger, Hubert, 4,331,527, Cl. 204-212.000.
Prior, Josef: *See—*
Habbel, Wolfgang; Prior, Josef; Schulte, Hans; and Voges, Christoph, 4,331,078, Cl. 102-202.110.
Procter & Gamble Company, The: *See—*
Bruce, Harry W., III, 4,331,696, Cl. 426-595.000.
Orr, Thomas V., 4,331,609, Cl. 260-448.00R.
Riley, Dennis P., 4,331,818, Cl. 568-17.000.
Promecam Sisson-Lehmann: *See—*
Cros, Pierre G., 4,331,020, Cl. 72-461.000.
Prototech Company: *See—*
Juda, Walter; Allen, Robert J.; and Lindstrom, Robert, 4,331,520, Cl. 204-105.00R.
Provanzano, Salvatore R.: *See—*
Elliott, Richard M.; Provanzano, Salvatore R.; and Sprague, Gordon V., Jr., 4,331,011, Cl. 69-6.500.
Provazek, Lionel D.: *See—*
Perner, Fred A.; and Provazek, Lionel D., 4,331,886, Cl. 307-270.000.
Putman, Stephen; and Erickson, Frederick L., to United States of America, Navy. Stabilizer for reducing motion of an object disposed in a fluid. 4,330,895, Cl. 441-22.000.
Qader, Shaik A., to Occidental Research Corporation. Process for the conversion of coal. 4,331,530, Cl. 208-10.000.
Quaker Oats Company, The: *See—*
Everett, George S., 4,331,583, Cl. 523-144.000.
Quaney, Patrick E. Construction panel. 4,330,969, Cl. 52-81.000.
Quinlan, Patrick M., to Petrolite Corporation. Demulsification process with thiazine quaternary ammonium salts of polyepihalohydrin. 4,331,554, Cl. 252-344.000.
R.L.S. Enterprises, Inc.: *See—*
Stecklow, James P., 4,331,217, Cl. 182-214.000.
Rabas, Kenneth J., to DCI Marketing. Point of purchase display device. 4,330,955, Cl. 40-489.000.
Racciato, Joseph S., to Merck & Co. Inc. Use of gum S-88 in printing paste systems. 4,331,440, Cl. 8-495.000.
Radisch, Helmer: *See—*
Schafer, Wolfgang; Radisch, Helmer; Fuchs, Reinhold; and Esser, Gunther, 4,331,736, Cl. 428-425.600.
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., to DeSoto, Inc. Low temperature curing thermosetting coatings for solvent-sensitive moldings. 4,331,719, Cl. 427-393.500.
Raidel, John E. Vehicle suspension. 4,331,348, Cl. 280-686.000.
Rajchman, Jan A. Light valve, light valve display, and method. 4,331,972, Cl. 358-60.000.
Raleigh, Edward: *See—*
Kushner, Gerald J.; and Raleigh, Edward, 4,330,924, Cl. 29-458.000.
Rangel-Garza, Javier. Emitters for drip irrigation systems, micro-sprinklers and similars, of the pressure compensating type and also those types whose flow varies in relation to the changes in pressure. 4,331,293, Cl. 239-542.000.
Ransburg Corporation: *See—*
Bentley, Stanley L.; and Jessup, David G., 4,331,298, Cl. 239-690.000.
Rapitsan Division, Lear Siegler, Inc.: *See—*
Shearer, James T., Jr., 4,331,417, Cl. 414-273.000.
Raudenbusch, Werner T.: *See—*
Bekooij, Jurrianus; Raudenbusch, Werner T.; and Stachowiak, Stephen A., 4,331,574, Cl. 525-530.000.
Raychem Corporation: *See—*
Geschwind, Gary I., 4,331,258, Cl. 220-359.000.
Raytheon Company: *See—*
Seidel, Harry W.; and Day, William J., Jr., 4,331,124, Cl. 126-21.00A.
RCA Corporation: *See—*
Bendell, Sidney L., 4,331,979, Cl. 358-209.000.
Keizer, Eugene O., 4,330,915, Cl. 29-169.500.
Laux, David E.; and Meyer, Kenneth E., 4,331,907, Cl. 315-400.000.
Limm, Albert C.; O'Brien, James T.; Colgrove, Thomas V.; and Nyul, Paul, 4,331,938, Cl. 372-50.000.
McDonie, Arthur F., 4,331,701, Cl. 427-10.000.
Parker, Robert P., 4,331,981, Cl. 358-243.000.
Parker, Robert P., 4,331,982, Cl. 358-243.000.
Schelhorn, Robert L., 4,331,700, Cl. 427-8.000.
Reading Alloys, Inc.: *See—*
Perfect, Frederick H., 4,331,475, Cl. 420-428.000.
Rechlicz, Thomas A., to PPG Industries, Inc. Method of preparing a cathode by high and low temperature electroplating of catalytic and sacrificial metals, and electrode prepared thereby. 4,331,517, Cl. 204-35.00R.
Reddien, Neil P. Golf shoes having replacement cleats. 4,330,950, Cl. 36-127.000.
Reddy, Ergam R. S. P.: *See—*
Scheit, Karl H.; Reddy, Ergam R. S. P.; Murti, Tangirala R.; Pandit, Madhusudan W.; and Bhargava, Pushpa M., 4,331,764, Cl. 435-199.000.
Rees, James D.; Kay, David B.; and Lama, William L., to Xerox Corporation. Gradient index lens array having reduction properties. 4,331,380, Cl. 350-96.250.
Rees, James D.: *See—*
McCrobie, George L.; Rees, James D.; and Donnel, Roscoe J., 4,331,388, Cl. 350-419.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, to Bayer Aktiengesellschaft. Combating fungi with triazolyl-alkenes. 4,331,675, Cl. 424-269.000.
Rehn, Karl-Heinz: *See—*
Schippers, Heinz; Rehn, Karl-Heinz; Weber, Klaus; Middelmann, Heinz; and Schulte, Karl-Heinz, 4,330,987, Cl. 57-1.00R.
Reinking, Klaus: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; Reinking, Klaus; Rohr, Harry; and Block, Hans-Dieter, 4,331,614, Cl. 260-930.000.
Reinsma, Harold L., to Caterpillar Tractor Co. Seal assembly having a plastic annular sealing member with an integral sealing lip. 4,331,339, Cl. 277-84.000.
Reliable Electric Company: *See—*
Baumbach, Bertram W., 4,331,839, Cl. 179-98.000.
Reliance Electric Company: *See—*
Edick, John D.; and Doering, Paul K., 4,331,895, Cl. 310-61.000.
Kiko, Frederick J., 4,331,842, Cl. 179-170.0NC.
Remley, Kenneth H., to American Cyanamid Co. Process for imparting wrinkle resistance to cellulosic textile materials and materials obtained thereby. 4,331,437, Cl. 8-115.700.
Remy, Joel, to Adret Electronique. Frequency synthesizer having a very high spectral purity. 4,331,932, Cl. 331-2.000.
Render, Michael L.; and Armstrong, John T., Jr., to Caterpillar Tractor Co. Speed and direction sensing circuit. 4,331,917, Cl. 324-166.000.
Renga, James M.; and Periana-Pillai, Roy A., to Dow Chemical Company, The. Preparation of cyclic carbonates. 4,331,604, Cl. 549-230.000.
Renner, Hans J.: *See—*
Jockel, Heinz; Moller, Friedrich W.; Renner, Hans J.; and Siebert, Gerd, 4,331,449, Cl. 48-197.00R.
Retech, Inc.: *See—*
Schlienger, Max P., 4,331,828, Cl. 373-153.000.
Reul, Bernhard; and Hiller, Dietrich, to Hoechst Aktiengesellschaft. Depot body on the basis of silicone rubber and process for the preparation thereof. 4,331,651, Cl. 424-19.000.
Reynaud, Marc. Apparatus for transferring a pasty matter for filling a hollow body. 4,331,188, Cl. 141-311.00R.
Reynolds Metals Company: *See—*
Dunn, Wendell E., Jr., 4,331,637, Cl. 423-135.000.
Dunn, Wendell E., Jr., 4,331,645, Cl. 423-625.000.
Rhone-Poulenc Industries: *See—*
Gazonnet, Jean-Pierre, 4,331,776, Cl. 521-91.000.
Mirabel, Bernard; and Rollin, Claude, 4,331,483, Cl. 127-46.200.
Rhone Poulenc S.A.: *See—*
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,331,814, Cl. 560-255.000.
Rich, Leonard G.: *See—*
Gerber, H. Joseph; and Rich, Leonard G., 4,331,051, Cl. 83-74.000.
Richard, Michel: *See—*
Girard, Pierre; and Richard, Michel, 4,331,713, Cl. 427-209.000.
Richardson, Victor E., to Dresser Industries, Inc. Grinder and wheel guards therefor. 4,330,967, Cl. 51-268.000.
Richmond, Moscow K. Gate-opening and closing assembly with automatic locking means. 4,330,958, Cl. 49-280.000.
Richter, Robert: *See—*
United States of America, National Aeronautics and Space Administration; and Richter, Robert, 4,331,742, Cl. 429-33.000.
Ricoh Company, Ltd.: *See—*
Mayer, Edward F.; Diamond, Arthur S.; and Chang, Paul, 4,331,756, Cl. 430-108.000.
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.
Riegel Textile Corporation: *See—*
Teed, Richard K., 4,331,501, Cl. 156-383.000.

Riggs, Dennis M.: *See—*
Diefendorf, Russell J.; and Riggs, Dennis M., 4,331,620, Cl. 264-29.200.

Riley, Dennis P., to Procter & Gamble Company, The. Chiral phospine ligand. 4,331,818, Cl. 568-17.000.

Rilly, Gerard, to Thomson-Brandt. Circuit for stabilized power supply in conjunction with the horizontal scanning circuit of a video-frequency receiver. 4,331,908, Cl. 315-411.000.

Rimdzius, Donald A., to Continental Group, Inc., The. Remote temperature-pressure recording system. 4,332,015, Cl. 365-45.000.

Rinaldo, James D.; and Vize, Robert M., to Caterpillar Tractor Co. Transmission filler assembly. 4,331,185, Cl. 141-95.000.

Rinker, Kurt H.: *See—*
Evans, Anthony C.; and Rinker, Kurt H., 4,331,221, Cl. 188-73.440.

Risch, Lothar; Pammer, Erich; and Friedrich, Karlheinz, to Siemens Aktiengesellschaft. Process of reducing density of fast surface states in MOS devices. 4,331,709, Cl. 427-94.000.

Risley, Robert F., to PepsiCo Inc. Bottle washer discharge sorting arrangement. 4,331,227, Cl. 198-339.000.

Ritscher, James S., to Union Carbide Corporation. Combustion catalyst and process for using same. 4,331,644, Cl. 423-437.000.

Rittenbach, Otto E., to United States of America, Army. False count correction in feedback shift registers and pulse generators using feedback shift registers. 4,331,925, Cl. 328-42.000.

Riverain Corporation: *See—*
Degen, Peter J., 4,331,142, Cl. 128-207.150.

Rivier, Jean E. F.: *See—*
Marki, Walter E.; Brown, Marvin R.; and Rivier, Jean E. F., 4,331,661, Cl. 424-177.000.

Rizzo, Joseph E., to University of Rochester, The. High power efficient frequency conversion of coherent radiation with nonlinear optical elements. 4,331,891, Cl. 307-427.000.

Ro, David H.; Klar, Erhard; and Whitman, Charles I., to SCM Corporation. Corrosion-resistant stainless steel powder and compacts made therefrom. 4,331,478, Cl. 75-228.000.

Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-Heterocyclic alkylamino-3-nitropyrroles. 4,331,668, Cl. 424-263.000.

Robert Bosch GmbH: *See—*
Klein, Karl-Heinz; and Kutzner, Reinhard, 4,331,992, Cl. 360-124.000.
Sohner, Gerhard; and Mezger, Manfred, 4,331,122, Cl. 123-595.000.

Robert, Guy: *See—*
Malugani, Jean-Pierre; and Robert, Guy, 4,331,750, Cl. 429-193.000.

Roberts, Elliot J., to Dorr-Oliver Incorporated. Desilication in alkaline pulp processes. 4,331,507, Cl. 162-29.000.

Robinet, Norman A. Priming and starting apparatus for engines. 4,331,110, Cl. 123-185.00A.

Robinson, John E. Template for trimming coved linoleum and the like. 4,330,939, Cl. 30-289.000.

Robinson, Morris D. Tailgate lift control safety circuit. 4,331,846, Cl. 200-47.000.

Rockwell International Corporation: *See—*
Heidt, Marvin W., 4,331,928, Cl. 330-149.000.
Hoyt, Richard C., 4,331,618, Cl. 264-0.500.
Lackman, Leslie M.; and Hill, John A., 4,331,495, Cl. 156-93.000.
Schulz, David W.; and Darby, Vene L., 4,331,284, Cl. 228-157.000.

Rodebush, James E., to Stauffer Chemical Company. Selective rice herbicide. 4,331,466, Cl. 71-88.000.

Rodgers, Robert E., Jr., to Leach Industries, Inc. Game racquet and method of making. 4,331,331, Cl. 273-73.00K.

Rodi & Wienenberger AG: *See—*
Wolfgang, Herchenbach, 4,330,905, Cl. 24-71.00J.

Rogers, Allen E. Visual note display apparatus. 4,331,062, Cl. 84-478.000.

Rogers, Lawrence D.: *See—*
Malcolm, Michael A.; Gerhold, Mark L. C.; Hodgman, Gary W.; Parker, Marshall M.; Rogers, Lawrence D.; and Spracklen, John E., 4,332,027, Cl. 370-94.000.

Rohlfing, Raymond G.; Welch, Melvin B.; and Dietz, Richard E., to Phillips Petroleum Company. Polymerization process using high molecular weight epoxides. 4,331,791, Cl. 526-125.000.

Rohm and Haas Company: *See—*
Akiyama, Hiroshi; and Naotsuka, Hideo, 4,331,541, Cl. 210-679.000.
Emmons, William D.; and Feely, Wayne E., 4,331,793, Cl. 526-260.000.

Rohm Pharma GmbH: *See—*
Voelger, Karl-Dieter; and Treudler, Ilse, 4,331,687, Cl. 424-330.000.

Rohr, Harry: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; Reinking, Klaus; Rohr, Harry; and Block, Hans-Dieter, 4,331,614, Cl. 260-930.000.

Roller, Hanno; Nauerth, Karl-Heinz; and Kitt, Rudi, to Fritz Eichenauer GmbH & Co. KG. Electrical resistance heating element. 4,331,860, Cl. 219-544.000.

Rollin, Claude: *See—*
Mirabel, Bernard; and Rollin, Claude, 4,331,483, Cl. 127-46.200.

Rollo, Frank D., to Capintec, Inc. Dynamic cardiac quality assurance phantom system and method. 4,331,869, Cl. 250-252.000.

Romer, Michael: *See—*
Eidenschink, Rudolf; Pohl, Ludwig; Romer, Michael; and del Pino, Fernando, 4,331,552, Cl. 252-299.600.

Roseman Mower Corporation: *See—*
Hall, George E.; and Carr, Jack, 4,330,981, Cl. 56-7.000.

Rosemount Inc.: *See—*
Ruesch, James R.; and Goetzinger, Charles E., 4,331,912, Cl. 323-271.000.

Rosenqvist, Nils K. G., to Kommanditbolaget United Stirling AB & Co. Double-acting hot gas engine assemblage. 4,330,994, Cl. 60-525.000.

Rosinski, Edward J.: *See—*
Rubin, Mae K.; and Rosinski, Edward J., 4,331,643, Cl. 423-329.000.

Ross, Dennis W.: *See—*
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,330,897, Cl. 15-246.000.

Ross, Svante B.: *See—*
Lindberg, Ulf H. A.; Ross, Svante B.; Thorberg, Seth-Olov; and Ogren, Sven O., 4,331,684, Cl. 424-311.000.

Rotterman, Karl: *See—*
Duncan, Gail F.; Browning, Emerson F.; and Rotterman, Karl, 4,331,267, Cl. 222-153.000.

Roudybush, Gerald L.; and Wilson, Richard A., to Magee Plastics Company. Resilient accessory for seat or the like. 4,331,360, Cl. 297-422.000.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,331,605, Cl. 549-314.000.

Rubano, Aldo. Tennis score keeper. 4,331,098, Cl. 116-225.000.

Rubin, Mae K.; and Rosinski, Edward J., to Mobil Oil Corporation. Use of diazobicyclooctane (DABCO) as a template in zeolite synthesis. 4,331,643, Cl. 423-329.000.

Rudacille, Calvin W.: *See—*
Chacour, Selim A.; and Rudacille, Calvin W., 4,331,314, Cl. 248-679.000.

Rudy, Michael W.: *See—*
Therien, Robert D.; Kraemer, Edward J.; and Rudy, Michael W., 4,331,275, Cl. 226-188.000.

Ruesch, James R.; and Goetzinger, Charles E., to Rosemount Inc. Circuit for converting a non-live zero current signal to a live zero DC output signal. 4,331,912, Cl. 323-271.000.

Ruge, William G., to Sperry Corporation. Gear changer. 4,331,039, Cl. 74-10.410.

Russell, Claude J. Compound bow holder. 4,331,311, Cl. 248-176.000.

Russell, Frederick L.; and Davis, Charles M., to Maximate Limited Partnership. Light shield. 4,331,136, Cl. 128-163.000.

Rutten, Ronald C.: *See—*
Courneya, Calice G., 4,330,946, Cl. 34-1.000.

Ryan, John O., to Ampex Corporation. Circuit and method for automatically setting the beam currents in a video camera. 4,331,980, Cl. 358-217.000.

Ryan, Wayne L. Method for calibrating a particle counting machine and a calibration standard therefor. 4,331,862, Cl. 235-92.0PC.

Ryder, Francis E.: *See—*
Thomas, Michael D.; and Ryder, Francis E., 4,331,859, Cl. 219-521.000.

Ryder International Corporation: *See—*
Thomas, Michael D.; and Ryder, Francis E., 4,331,859, Cl. 219-521.000.

S.F.E.N.A.: *See—*
Sicre, Jean-Luc, 4,331,032, Cl. 73-179.000.

S.K.Y. Polymers: *See—*
Stoy, Vladimir A., 4,331,783, Cl. 525-294.000.

SAB Industri AB: *See—*
Morner, Bengt O. J. S., 4,331,457, Cl. 55-163.000.

Sacks, Alvin H. Digital cuff apparatus for determining blood pressure without use of a stethoscope. 4,331,155, Cl. 128-686.000.

Sailor Manufacturing Inc.: *See—*
Sailor, Vernon R., 4,330,972, Cl. 52-211.000.

Sailor, Vernon R., to Sailor Manufacturing Inc. Door jamb assembly. 4,330,972, Cl. 52-211.000.

Saint-Gobain Industries: *See—*
Schafer, Wolfgang; Radisch, Helmer; Fuchs, Reinhold; and Esser, Gunther, 4,331,736, Cl. 428-425.600.

St. Joseph Bank and Trust Company, executor: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,601, Cl. 548-461.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,794, Cl. 526-262.000.

Saito, Isao: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.

Saito, Kazumoto: *See—*
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.

Saito, Takeo: *See—*
Kitai, Kiyoshi; and Saito, Takeo, 4,331,399, Cl. 354-25.000.

Saitoh, Joichi, to Kitobuki Seihan Printing Co., Ltd. Apparatus for resharpening cutting tools. 4,331,515, Cl. 204-228.000.

Saitoh, Shigeru. Electric switch device. 4,331,844, Cl. 200-16.00R.

Sakaguchi, Hiroshi. Method of deodorizing *Houttuynia cordata* Thunb. 4,331,765, Cl. 435-267.000.

Sakai, Kazumasa: *See—*
Shibata, Isumi; Sakai, Kazumasa; and Sanpei, Nobuyuki, 4,331,930, Cl. 330-267.000.

Sakai, Tokuji: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,331,822, Cl. 585-482.000.

Sakane, Kazuo: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,331,665, Cl. 424-246.000.

Sakurai, Hisaya: *See*—
Hamada, Minoru; Sakurai, Hisaya; Masamoto, Jyunzo; Yoshida, Takeo; and Hazawa, Hiroshi, 4,331,439, Cl. 8-442.000.

Sakurai, Kenji: *See*—
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,331,627, Cl. 264-332.000.

Saletta, Gary F.: *See*—
Engel, Joseph C.; Wafer, John A.; Elms, Robert T.; and Saletta, Gary F., 4,331,999, Cl. 361-94.000.

Salk Institute for Biological Studies, The: *See*—
Marki, Walter E.; Brown, Marvin R.; and Rivier, Jean E. F., 4,331,661, Cl. 424-177.000.

Samudrala, Rama P., to Minnesota Mining and Manufacturing Company. Curing of polyamic acids or salts thereof by ultraviolet exposure. 4,331,705, Cl. 427-54.100.

Sanders, Forest E. Adjustable hinge. 4,330,901, Cl. 16-237.000.

Sandhu, J. S.: *See*—
Morley, Richard M.; Multani, Jagir S.; and Sandhu, J. S., 4,330,930, Cl. 29-571.000.

Sandifer, Shelly S.: *See*—
Williams, Vincent P.; and Sandifer, Shelly S., 4,331,054, Cl. 83-224.000.

Sandner, Michael R.: *See*—
Baskent, Feyyaz O.; and Sandner, Michael R., 4,331,555, Cl. 252-351.000.

Sandoz Ltd.: *See*—
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Sandstrom, Johnny: *See*—
Marklund, Karl-Gerhard; Larsson, Hakan; and Sandstrom, Johnny, 4,330,973, Cl. 52-233.000.

Sango, Hiroshi: *See*—
Kawarada, Tsutomu; Yamada, Kimichika; Sango, Hiroshi; and Kiyokawa, Katsushige, 4,331,398, Cl. 353-113.000.

Sankyo Electric Company Limited: *See*—
Asami, Makoto, 4,331,068, Cl. 99-325.000.

Sano, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic shock absorber for vehicles. 4,331,224, Cl. 188-322.220.

Sano, Tetsu: *See*—
Shimizu, Tatuo; Ishiwata, Hisao; Sano, Tetsu; and Aramaki, Yoshimitsu, 4,331,898, Cl. 313-59.000.

Sano, Yasuro: *See*—
Hisatake, Michio; Kasuga, Noboru; and Sano, Yasuro, 4,331,092, Cl. 112-275.000.

Sanpei, Nobuyuki: *See*—
Shibata, Isumi; Sakai, Kazumasa; and Sanpei, Nobuyuki, 4,331,930, Cl. 330-267.000.

Sansregret Joseph L.: *See*—
Muruska, H. Paul; Sansregret Joseph L.; and Young, Archie R., 4,331,707, Cl. 427-74.000.

Sanyo Chemical Industries, Ltd.: *See*—
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.

Sanzenbacher, Charles W.: *See*—
Scarlett, John C.; and Sanzenbacher, Charles W., 4,331,470, Cl. 75-35.000.

Sartorius GmbH: *See*—
Pett, Manfred, 4,331,535, Cl. 210-85.000.

Sarui, Kiichiro. Apparatus for treating athlete's foot. 4,331,137, Cl. 128-200.160.

Saruwatari, Shinzi: *See*—
Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, 4,331,897, Cl. 310-234.000.

Sasaki, Kouji: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,331,939, Cl. 372-92.000.

Sasaki, Tomio: *See*—
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.

Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Method of manufacturing target of image pickup tube. 4,331,506, Cl. 156-633.000.

Sasaya, Osamu: *See*—
Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, 4,331,752, Cl. 430-28.000.

Sato, Hidenori: *See*—
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, 4,331,120, Cl. 123-519.000.

Sato, Makoto: *See*—
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,330,995, Cl. 60-562.000.

Sato, Masaru, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmoscopic slit lamp. 4,331,392, Cl. 351-14.000.

Sato, Mitsuyoshi: *See*—
Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, 4,331,872, Cl. 250-307.000.

Sato, Susumu: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,331,807, Cl. 544-224.000.

Sato, Toru, to Osaka Oxygen Industries, Ltd. Method of producing oxygen rich gas utilizing an oxygen concentrator having good start-up characteristics. 4,331,455, Cl. 55-21.000.

Sato, Yo, to Kabushiki Kaisha Sato. Bar code printing device. 4,331,076, Cl. 101-110.000.

Sato, Yuichi: *See*—
Suzuki, Masayuki; Sato, Yuichi; and Kanno, Ken-ichi, 4,331,699, Cl. 427-8.000.

Saunders, Ralph R.: *See*—
Gilman, John J.; and Saunders, Ralph R., 4,331,497, Cl. 156-195.000.

Savanick, George A.: *See*—
Krawza, Walter G.; and Savanick, George A., 4,331,975, Cl. 358-100.000.

Scannell, Edward F.; and Schultz, William J., to General Electric Co. Meter movement having reinforced armature assembly. 4,331,916, Cl. 324-151.00R.

Scarafile, Cosimo: *See*—
Foglio, Maurizio; Franceschi, Giovanni; Scarafile, Cosimo; and Arcamone, Federico, 4,331,677, Cl. 424-270.000.

Scaramuzzi, Rex J.: *See*—
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., 4,331,657, Cl. 424-88.000.

Scarlett, John C.; and Sanzenbacher, Charles W., to Midrex Corporation. Method for the direct reduction of iron in a shaft furnace using gas from coal. 4,331,470, Cl. 75-35.000.

Schachl, Rudolf; and Gatzen, Hans-Heinrich, to Siemens Aktiengesellschaft. Device and method for smoothening surfaces of disks for disk memories. 4,330,910, Cl. 29-90.00R.

Schaefer, Carl F.; and Bedford, Raymond E., to General Motors Corporation. Method for forming high surface area catalyst carrier and catalyst using same. 4,331,565, Cl. 252-462.000.

Schaenzer, Gordon N. Cartridge reloading press. 4,331,063, Cl. 86-36.000.

Schafer, Wolfgang; Radisch, Helmer; Fuchs, Reinhold; and Esser, Gunther, to Saint-Gobain Industries. Process utilizing release agent. 4,331,736, Cl. 428-425.600.

Schane, Harry P., Jr.: *See*—
Christiansen, Robert G.; Bell, Malcolm R.; and Schane, Harry P., Jr., 4,331,663, Cl. 424-241.000.

Schaper, Helmut, to Braunschweigische Maschinenbauanstalt. Continuously operating centrifuge. 4,331,482, Cl. 127-19.000.

Schaper, Lambert: *See*—
Boersma, Michael A. M.; Post, Martin F. M.; and Schaper, Lambert, 4,331,774, Cl. 518-714.000.

Schatz, Friedrich: *See*—
Klebl, Wolfram; Schatz, Friedrich; and Ziemek, Gerhard, 4,331,281, Cl. 228-125.000.

Schauffele, Carl N.: *See*—
Brownstein, Scott A.; and Schauffele, Carl N., 4,331,400, Cl. 354-33.000.

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Lutzke, Albert J.; and Schiek, James M., 4,331,430, Cl. 440-53.000.

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Schlienger, Max P., to Retech, Inc. Apparatus for mounting a crucible within an electric furnace. 4,331,828, Cl. 373-153.000.

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Schneider, Rupert, to Sandoz Ltd. Quinazolines for controlling ectoparasites. 4,331,667, Cl. 424-251.000.

Schober, Gernot: *See*—
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Scholz, Romanus: *See*—
Heidemeyer, Paulus; Zimmermann, Frank; and Scholz, Romanus, 4,331,226, Cl. 192-0.076.

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Winkler, Alfred; Engelsmann, Dieter; Schroder, Rolf; and Maas, Dieter, 4,331,407, Cl. 354-187.000.

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Buckler, Robert T.; and Schroeder, Hartmut R., 4,331,808, Cl. 544-234.000.

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Brauer, Juergen; and Schuck, Wolf-Dieter, 4,331,959, Cl. 343-18.00A.

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Habbel, Wolfgang; Prior, Josef; Schulte, Hans; and Voges, Christoph, 4,331,078, Cl. 102-202.110.

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Schultz, William J.: *See*—
Scannell, Edward F.; and Schultz, William J., 4,331,916, Cl. 324-151.00R.

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Science Research Center, Inc.: *See*—
Brewer, John H.; and Foster, Terry L., 4,331,650, Cl. 424-12.000.

Scientific Micro Systems, Inc.: *See*—
Lazar, Janos J.; and Fazakerly, William B., 4,331,369, Cl. 312-334.000.

SCM Corporation: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,331,478, Cl. 75-228.000.

Scotcher, Douglas E.: *See*—
Thompson, Robert L.; and Scotcher, Douglas E., 4,330,898, Cl. 15-250.320.

Scott, James W. Record storage system. 4,331,242, Cl. 211-40.000.

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Curtis, John S.; and Hurst, Albert, 4,331,832, Cl. 174-57.000.

Sedgewick, Richard D. Zig-zag windings, winding machine, and method. 4,331,896, Cl. 310-179.000.

See, Gary R.: *See*—
Bauman, Verne W.; and See, Gary R., 4,331,954, Cl. 340-706.000.

Seeger, Richard O.: *See*—
Jadus, Dale K.; and Seeger, Richard O., 4,331,887, Cl. 307-270.000.

Seidel, Harry W.; and Day, William J., Jr., to Raytheon Company. Flue aspirated oven. 4,331,124, Cl. 126-21.00A.

Seike, Takashi; and Kobayashi, Takehiko, to Mitsubishi Gas Chemical Company, Inc. Exothermic body. 4,331,731, Cl. 428-305.500.

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Kitai, Kiyoshi; and Saito, Takeo, 4,331,399, Cl. 354-25.000.

Seino, Junzaburo: *See*—
Nishikuri, Masao; Yamazaki, Michio; Kojima, Kiyoteru; Seino, Junzaburo; and Kenmochi, Hirohito, 4,331,584, Cl. 524-206.000.

Seissl, Johann: *See*—
Amtmann, Heribert; Broenner, Karlheinz; and Seissl, Johann, 4,331,876, Cl. 250-402.000.

Sekimori, Toshiyuki; and Shigenobu, Hiromichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electric winch system. 4,331,323, Cl. 254-323.000.

Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, to Nissan Motor Company, Limited. Control system for automotive vehicle component assembly lines. 4,332,012, Cl. 364-468.000.

Sellke, Richard G.: *See*—
Epina, August P.; Sellke, Richard G.; and Lunka, Harold A., 4,331,306, Cl. 242-182.000.

Senft, James R., to Sunpower, Inc. Drive mechanism for Stirling engine displacer and other reciprocating bodies. 4,330,992, Cl. 60-518.000.

Service Distributors, Inc.: *See*—
Sidline, George B.; and Jones, Shattuc, 4,331,863, Cl. 235-434.000.

Setloff, Jerome: *See*—
Brown, Robert; and Setloff, Jerome, 4,331,653, Cl. 424-28.000.

Severson, Asbjorn M.; and Volk, John A., to Honeywell Inc. Fluid flowmeter. 4,331,036, Cl. 73-861.050.

Shafer, David R., to Perkin-Elmer Corporation, The. Monocentric optical systems. 4,331,390, Cl. 350-444.000.

Shanoski, Henry, to General Tire & Rubber Company, The. One component in-mold coating. 4,331,735, Cl. 428-423.700.

Shanton, Kenneth J.; and Grant, Richard A., to Matthey Rustenburg Refiners (Pty) Limited. Solvent extraction process for the selective extraction of palladium. 4,331,634, Cl. 423-22.000.

Sharp Kabushiki Kaisha: *See*—
Minami, Yasuo, 4,331,386, Cl. 350-357.000.
Tanabe, Takeshi, 4,331,855, Cl. 219-10.55B.

Shaw, Peter M.; and Noble, Andrew F., to Smith Brothers (Whitehaven) Limited. Method of making packaging using a tinted adhesive laminate. 4,331,491, Cl. 156-64.000.

Shearer, James T., Jr., to Rapitsan Division, Lear Siegler, Inc. Vehicle alignment and method. 4,331,417, Cl. 414-273.000.

Sheibley, Dean W., to United States of America, National Aeronautics and Space Administration. Advanced inorganic separators for alkaline batteries. 4,331,746, Cl. 429-144.000.

Sheldon, Steve S., to Skipura Enterprises, Inc. Window shield for vehicle body. 4,331,359, Cl. 296-146.000.

Shell Oil Company: *See*—
Bekooij, Jurrianus; Raudenbusch, Werner T.; and Stachowiak, Stephen A., 4,331,574, Cl. 525-530.000.
Boersma, Michael A. M.; Post, Martin F. M.; and Schaper, Lambert, 4,331,774, Cl. 518-714.000.
Davison, Sol, 4,331,581, Cl. 524-364.000.

Shemwell, Gale A., to Carnation Company. Alcohol-stable, low ph-stable fat emulsion product. 4,331,689, Cl. 426-98.000.

Sher, Arden: *See*—
United States of America, National Aeronautics and Space Administration; Miller, William E.; Sher, Arden; and Tsuo, Yuan H., 4,331,873, Cl. 250-330.000.

Sherer, Charles R.; and Mercer, William R. Pipe welding apparatus. 4,331,278, Cl. 228-29.000.

Sherritt Gordon Mines Limited: *See*—
Kunda, Wasyl, 4,331,469, Cl. 75-0.50A.

Sherwin-Williams Company, The: *See*—
Kindrick, Robert H., 4,331,706, Cl. 427-74.000.

Shibata, Isumi; Sakai, Kazumasa; and Sanpei, Nobuyuki, to Trio Kabushiki Kaisha. Bias circuit for power amplifier. 4,331,930, Cl. 330-267.000.

Shigenobu, Hiromichi: *See*—
Sekimori, Toshiyuki; and Shigenobu, Hiromichi, 4,331,323, Cl. 254-323.000.

Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., to Zilog, Inc. Microprocessor apparatus and method. 4,332,008, Cl. 364-200.000.

Shimano Industrial Company, Limited: *See*—
Shimano, Keizo, 4,331,043, Cl. 74-594.200.

Shimano, Keizo, to Shimano Industrial Company, Limited. Gear crank for a bicycle. 4,331,043, Cl. 74-594.200.

Shimizu, Hisashi: *See*—
Sekine, Yoshitada; Imaizumi, Hiroshi; Katagi, Shoji; Obata, Kazunori; Abe, Kazuyoshi; and Shimizu, Hisashi, 4,332,012, Cl. 364-468.000.
Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, 4,331,820, Cl. 570-189.000.

Shimizu, Tatuo; Ishiwata, Hisao; Sano, Tetsu; and Aramaki, Yoshimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Image intensifier with two-layer input window. 4,331,898, Cl. 313-59.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, 4,331,820, Cl. 570-189.000.

Shin, Shigemitsu: *See*—
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.

Shinbo, Shoji: *See*—
Tateishi, Masaaki; and Shinbo, Shoji, 4,332,001, Cl. 361-399.000.

Shindelar, Joseph J., to Deere & Company. Machine for rolling hay into cylindrical bales. 4,330,985, Cl. 56-341.000.

Shiota, Ikuo: *See*—
Nishizawa, Jun-ichi; and Shiota, Ikuo, 4,331,737, Cl. 428-457.000.

Shirakura, Toshiharu: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,331,939, Cl. 372-92.000.

Shirogane, Junji: *See*—
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Shop-Vac Corporation: *See*—
Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., 4,330,899, Cl. 15-326.000.

Shortombaev, Amangeldy: *See—*
Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy, 4,331,241, Cl. 209-589.000.

Showa Denko KK: *See—*
Kawasaki, Keiji, 4,331,523, Cl. 204-129.000.

Shreve, William R.: *See—*
Cross, Peter S.; and Shreve, William R., 4,331,943, Cl. 333-194.000.

SHS Enterprises, Ltd.: *See—*
Kuntz, David H.; and Ingram, James A., 4,331,162, Cl. 128-761.000.

Shudo, Koichi: *See—*
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,331,807, Cl. 544-224.000.

Shuman, Robert T.: *See—*
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,331,593, Cl. 260-112.50E.

Shutler, Stephen W.: *See—*
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,331,680, Cl. 424-303.000.

Siaens, Gustaaf F. R.: *See—*
Notelteirs, Victor R.; and Siaens, Gustaaf F. R., 4,331,900, Cl. 313-222.000.

Sicre, Jean-Luc, to S.F.E.N.A. Variometers. 4,331,032, Cl. 73-179.000.

Sidline, George B.; and Jones, Shattuc, to Service Distributors, Inc. Punch mechanism for machine actuator cards. 4,331,863, Cl. 235-434.000.

Siebert, Gerd: *See—*
Jockel, Heinz; Moller, Friedrich W.; Renner, Hans J.; and Siebert, Gerd, 4,331,449, Cl. 48-197.00R.

Siemens Aktiengesellschaft: *See—*
Amtmann, Heribert; Broenner, Karlheinz; and Seissl, Johann, 4,331,876, Cl. 250-402.000.
Barabas, Udo, 4,331,950, Cl. 340-825.870.
Dahlstrom, Bo; and Olsson, Sven G., 4,331,963, Cl. 346-62.000.
Hieber, Konrad; and Mayer, Norbert, 4,331,702, Cl. 427-10.000.
Keller, Wolfgang, 4,331,827, Cl. 373-139.000.
Meixner, Hans, 4,331,861, Cl. 219-553.000.
Neumann, Leopold, 4,331,962, Cl. 346-33.0ME.
Oestreich, Ulrich; Zeidler, Gunter; and Schober, Gernot, 4,331,379, Cl. 350-96.230.
Risch, Lothar; Pammer, Erich; and Friedrich, Karlheinz, 4,331,709, Cl. 427-94.000.
Schachl, Rudolf; and Gatzen, Hans-Heinrich, 4,330,910, Cl. 29-90.00R.
Weichert, Norbert, 4,331,870, Cl. 250-280.000.

Siemens Corporation: *See—*
Cripe, Jerry D., 4,330,929, Cl. 29-570.000.
Ganz, Manfred; Gueldner, Enrique; and Burgermeister, Dieter, 4,331,834, Cl. 178-3.000.
Gueldner, Enrique; and Major, James M., 4,331,835, Cl. 178-3.000.

SIG Societe Industrielle Suisse Industrieplatz: *See—*
Pasquini, Sandro, 4,331,082, Cl. 104-12.000.

Silkman, William D.: *See—*
Messina, Benedicto U.; and Silkman, William D., 4,332,010, Cl. 364-200.000.

Silva, Wilbur W.; and Zlab, Victor K. Refuse container supporting apparatus. 4,331,310, Cl. 248-146.000.

Simmons Fastener Corporation: *See—*
Hoen, Cuyler, 4,331,413, Cl. 411-44.000.

Simokat, Frank L., to TII Industries, Inc. Telephone ringer isolator circuit arrangement. 4,331,838, Cl. 179-17.00E.

Simonds, Edward L. Fuel system for internal combustion engine. 4,331,116, Cl. 123-337.000.

Simpson, James E.: *See—*
Allersma, Ties; and Simpson, James E., 4,331,023, Cl. 73-19.000.

Simulaids, Inc.: *See—*
Sweeney, Kevin M., 4,331,426, Cl. 434-265.000.

Singh, Baldev: *See—*
Lesher, George V.; and Singh, Baldev, 4,331,671, Cl. 424-263.000.

Skach, Edward J., Jr.; and Neipert, Marshall P., to Dow Chemical Company, The. Production of salt-coated magnesium particles. 4,331,711, Cl. 427-180.000.

SKF Industrial Trading & Development Co. B.V.: *See—*
Kapsan, Hendrikus J.; and Verburgh, Martin B., 4,330,911, Cl. 29-148.40A.

Skipura Enterprises, Inc.: *See—*
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Skoog, Lambert: *See—*
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, 4,331,662, Cl. 424-180.000.

Slaughter, Grimes G. Lighting system for use on a welder helmet. 4,332,004, Cl. 362-105.000.

Slechta, Libor: *See—*
Hoeksema, Herman; and Slechta, Libor, 4,331,659, Cl. 424-122.000.

Smiley, Robert A., to Du Pont de Nemours, E. I., and Company. Treatment of dibasic esters with alkali metal methylates. 4,331,812, Cl. 560-191.000.

Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy. Apparatus for thickness sorting of sheet materials. 4,331,241, Cl. 209-589.000.

Smith Brothers (Whitehaven) Limited: *See—*
Shaw, Peter M.; and Noble, Andrew P., 4,331,491, Cl. 156-64.000.

Smith International, Inc.: *See—*
Liljestrand, Walter E., 4,331,458, Cl. 55-184.000.

Smith, John L., to Andrew Hydraulics International Limited. Device for crimping tubular elements. 4,331,019, Cl. 72-402.000.

Smith, Joseph E.: *See—*
Trudeau, William H.; and Smith, Joseph E., 4,331,367, Cl. 308-26.000.

Smith Kline & French Laboratories Limited: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,331,668, Cl. 424-263.000.

Smith, Sherrel C., to Chromaco, Inc. Photoconductive instrument. 4,331,867, Cl. 250-231.00R.

Smith, Stephen W.: *See—*
Lopez, Hector; and Smith, Stephen W., 4,331,021, Cl. 73-1.0DV.

Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T. Analgesic compounds. 4,331,593, Cl. 260-112.50E.

Snamprogetti S.p.A.: *See—*
Prevedello, Aldo; and Platone, Edoardo, 4,331,568, Cl. 252-522.00R.

Snyder, Philip; and Freedman, David, to New Brunswick Scientific Co., Inc. Calibratable automatic fluid dispenser. 4,331,262, Cl. 222-37.000.

Sobczyk, Erhard, to Vorwerk & Co. Interholding GmbH. Mounting arrangement for a suction nipple on a vacuum cleaner. 4,331,351, Cl. 285-7.000.

Societe Anonyme Automobiles Citroen: *See—*
Arnault, Dominique, 4,331,109, Cl. 123-179.00H.

Societe Anonyme dite: CERAVER: *See—*
Pargamin, Laurent; and Thuillier, Denis, 4,331,833, Cl. 174-179.000.

Societe Anonyme dite: GIPELEC: *See—*
Malugani, Jean-Pierre; and Robert, Guy, 4,331,750, Cl. 429-193.000.

Societe Nouvelle Baele-Gangloff Societe Anonyme: *See—*
Pagay, Roger; and Tavernier, Georges, 4,331,498, Cl. 156-256.000.

Societe STENDHAL S.A.: *See—*
Ortal, Raymond, 4,331,239, Cl. 206-581.000.

Soderholm, Leo H.; and Andrew, James F., to United States of America, Agriculture. Field control for wind-driven generators. 4,331,881, Cl. 290-44.000.

Soga, Hiromu; Kitamura, Koichi; Sasaki, Tomio; Sato, Mitsuyoshi; and Ishijima, Hiroshi, to Nippon Steel Corporation; and Kabushiki Kaisha Daini Seikosha. Method for measurement of distribution of inclusions in a slab by electron beam irradiation. 4,331,872, Cl. 250-307.000.

Sohner, Gerhard; and Mezger, Manfred, to Robert Bosch GmbH. Adapter for improving the operation of electrical circuits in a motor vehicle. 4,331,122, Cl. 123-595.000.

Sokolovsky, Paul J., to Advanced Micro Devices, Inc. Printing element with shock absorber feature. 4,331,077, Cl. 101-298.000.

Solarex Corporation: *See—*
Dominguez, Ramon; and Anderson, Jack R., 4,331,492, Cl. 156-66.000.
Lindmayer, Joseph, 4,331,703, Cl. 427-37.000.

Solender, Peter E.: *See—*
Wheelwright, Robert W.; and Solender, Peter E., 4,331,057, Cl. 84-1.170.

Sommerfeld, Claus-Dieter; Haas, Peter; Wagner, Kuno; and Kapps, Manfred, to Bayer Aktiengesellschaft. Process for the production of polyurethane plastics. 4,331,778, Cl. 521-129.000.

Sonobe, Tadashi; Nitobe, Mitsuhiro; Saruwatari, Shinzi; Kawai, Sueo; and Hattori, Toshio, to Hitachi, Ltd. Commutator apparatus for rotary electric machine. 4,331,897, Cl. 310-234.000.

Sony Corporation: *See—*
Tanaka, Masato, 4,331,985, Cl. 360-13.000.
Yorizumi, Mineo; and Makino, Yoshimi, 4,331,548, Cl. 252-62.610.

Sorensen, Erling, to PLM AB. Container. 4,331,246, Cl. 215-1.00C.

Sorenson, James B.: *See—*
Sorenson, Robert S.; and Sorenson, James B., 4,331,205, Cl. 172-538.000.

Sorenson, Robert S.; and Sorenson, James B., to Brown County Manufacturing, Inc. Depth control wheel for seed planter. 4,331,205, Cl. 172-538.000.

Sorenson, Wayne P., to American Can Company. Fibrous web structure. 4,331,730, Cl. 428-286.000.

Soumagne, Joel. Speech/silence discriminator for speech interpolation. 4,331,837, Cl. 179-1.0SC.

South Eastern Electricity Board: *See—*
Fielden, John S., 4,331,915, Cl. 324-110.000.

Span Instruments, Inc.: *See—*
Gray, Tommy L., 4,331,179, Cl. 137-627.500.

Sparber, Richard G., to Bell Telephone Laboratories, Incorporated. Precision negative impedance circuit with calibration. 4,331,913, Cl. 323-303.000.

Sparkomaric Corporation: *See—*
Castagna, John F., 4,331,841, Cl. 179-146.00E.

Specified Ceiling Systems: *See—*
McCall, Francis L., 4,332,005, Cl. 362-150.000.

Spector, George: *See—*
Vin Dick, James; and Spector, George, 4,331,720, Cl. 428-9.000.

Speeflo Manufacturing Corporation: *See—*
Levey, Gustave S., 4,331,296, Cl. 239-288.000.

Sperry Corporation: *See—*
Ruge, William G., 4,331,039, Cl. 74-10.410.

Spevack, Jerome S., to Deuterium Corporation. Apparatus for purifying a vaporizable liquid. 4,331,513, Cl. 202-158.000.

Spracklen, John E.: *See—*
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Sprague, Gordon V., Jr.: *See—*
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Sprangle, Phillip A.: *See—*
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.

Sprenkle, George J., to Burroughs Corporation. Dressing finger assembly for automatic wiring machines. 4,331,182, Cl. 140-93.00R.

Squitieri, Vincent: *See—*
Malinaric, Paul J.; and Squitieri, Vincent, 4,331,948, Cl. 338-21.000.

Staar, Marcel J. H., to Panpack A.G. Package for accommodating and ejecting small amounts of flowing material. 4,331,264, Cl. 222-94.000.

Stachowiak, Stephen A.: *See—*
Bekooij, Jurrianus; Raudenbusch, Werner T.; and Stachowiak, Stephen A., 4,331,574, Cl. 525-530.000.

Stahl, Robert M.: *See—*
Michalska, Tamara M.; and Stahl, Robert M., 4,331,198, Cl. 165-9.000.

Standard Oil Company: *See—*
Pesa, Frederick A.; and Haase, Thomas A., 4,331,612, Cl. 260-465.400.

Standard Oil Company (Indiana): *See—*
Ginsburgh, Irwin, 4,331,117, Cl. 123-425.000.

Staniland, Philip A., to Imperial Chemical Industries Limited. Production of aromatic polyethers with infusible particulate substance. 4,331,798, Cl. 528-125.000.

Stanley, Frederick W., Jr.: *See—*
Fairchok, William J.; and Stanley, Frederick W., Jr., 4,331,787, Cl. 523-324.000.

Stark, Bill. Spray shields and spraying methods. 4,331,716, Cl. 427-282.000.

Starkweather, Donald E. Hardware elements storage dispenser and game device. 4,331,335, Cl. 273-345.000.

Stauffer Chemical Company: *See—*
Gutman, Arnold D.; and Williams, John W., 4,331,480, Cl. 106-18.330.
Gutman, Arnold D., 4,331,681, Cl. 424-304.000.
Rodebush, James E., 4,331,466, Cl. 71-88.000.

Stecklow, James P., to R.L.S. Enterprises, Inc. Ladder step and stabilizer. 4,331,217, Cl. 182-214.000.

Steel Heddle Manufacturing Company: *See—*
Blevins, Maurice E.; and Carlson, Gilbert E., 4,331,865, Cl. 250-222.0PC.

Steer, Peter L.; and Edwards, John V., to Kingsdown Medical Consultants Limited. Deodorizing ostomy bag cover. 4,331,148, Cl. 128-283.000.

Stegmeier, William J. Simulated volcanic rock. 4,331,734, Cl. 428-403.000.

Steiner, Ronald M.: *See—*
Koepsel, Roger E.; Steiner, Ronald M.; and Wilcox, Daniel G., 4,331,429, Cl. 440-49.000.

Steingroever, Erich A.: *See—*
Muller, Werner; and Steingroever, Erich A., 4,331,101, Cl. 118-658.000.

Steinmann, Albin: *See—*
Bodenmann, Peter, 4,331,164, Cl. 131-235.00R.

Steinmetz, Manfried. Infrared radiation system. 4,331,878, Cl. 250-504.00R.

Stephan, Craig H., to Xerox Corporation. Self-spacing touchdown development method. 4,331,754, Cl. 430-102.000.

Sterling Drug Inc.: *See—*
Christiansen, Robert G.; Bell, Malcolm R.; and Schane, Harry P., Jr., 4,331,663, Cl. 424-241.000.
Lesher, George V.; and Singh, Baldev, 4,331,671, Cl. 424-263.000.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,331,672, Cl. 424-263.000.

Stern, Ralph C.: *See—*
Mysicka, James C.; Stern, Ralph C.; and Augustine, Robert J., 4,331,067, Cl. 99-305.000.

Sternberg, Robert L.; and Anderson, Warren A., to United States of America, Navy. Wide band mosaic lens antenna array. 4,332,018, Cl. 367-150.000.

Stetter, Jorg: *See—*
Kramer, Wolfgang; Stetter, Jorg; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,331,674, Cl. 424-269.000.

Stewart, Robert C.: *See—*
Handley, Edward W.; and Stewart, Robert C., 4,331,178, Cl. 137-556.300.

Stewart Stamping Corporation: *See—*
Wolfthal, Maurice, 4,330,927, Cl. 29-564.400.

Stimtech, Inc.: *See—*
Keller, John W., Jr.; Bursack, William E.; and Coombes, Alan, 4,331,157, Cl. 128-419.00R.

Stockton, Thomas R.: *See—*
Bookout, Charles C.; and Stockton, Thomas R., 4,331,044, Cl. 74-688.000.

Stokes, Charlie M. Blending system for unconventional fuels and regular fuel or fuels. 4,331,121, Cl. 123-575.000.

Stoneleigh Trust, The: *See—*
Massa, Frank, 4,332,017, Cl. 367-148.000.

Storage Technology Corporation: *See—*
Epina, August P.; Sellke, Richard G.; and Lunka, Harold A., 4,331,306, Cl. 242-182.000.
Moe, Erik, 4,331,966, Cl. 346-137.000.
Morehouse, James H.; and Swenson, Mark A., 4,331,991, Cl. 360-106.000.

Storandt, Duane L. Fire starter unit. 4,331,125, Cl. 126-25.00B.

Stotts, Everett J.; and Arbuthnot, Glenn S. Collagen protein thermal insulating foam and method. 4,331,547, Cl. 252-62.000.

Stoy, Vladimir A., to S.K.Y. Polymers. Novel block copolymers including acrylonitrile sequences and glutarimide units and processes for preparing same. 4,331,783, Cl. 525-294.000.

Streubel, Wolfgang: *See—*
Benteler, Hubertus; Streubel, Wolfgang; and Olszewski, Egon, 4,331,015, Cl. 72-133.000.
Benteler, Hubertus; Streubel, Wolfgang; and Olszewski, Egon, 4,331,016, Cl. 72-133.000.

Stritzke, Gunther: *See—*
Kalisch, Alfons; and Stritzke, Gunther, 4,331,920, Cl. 324-225.000.

Stritzl, Karl: *See—*
Kubelka, Axel; and Stritzl, Karl, 4,330,949, Cl. 36-117.000.

Strouss, Richard W. Stud mounted toggle clamp with a secondary release mechanism. 4,331,326, Cl. 269-93.000.

Strunc, Gerald R.: *See—*
Willenbring, Armer J.; Osby, Warren J.; and Strunc, Gerald R., 4,330,978, Cl. 53-435.000.

Studiengesellschaft Kohle mbH: *See—*
Zosel, Kurt, 4,331,695, Cl. 426-430.000.

Su, Tien-Kuei, to Milliken Research Corporation. Fibrillated polyester textile materials. 4,331,724, Cl. 428-91.000.

Sudo, Masatoshi; and Tsukatani, Ichiro, to Kobe Steel, Ltd. Cold-rolled ultra low carbon steel sheet with improved press-forming properties. 4,331,488, Cl. 148-36.000.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Hesse, Wolfgang, 4,331,201, Cl. 165-153.000.

Suga, Toyohiko: *See—*
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

Sugatsune Industrial Co., Ltd.: *See—*
Okuno, Toyoji, 4,331,355, Cl. 292-251.500.

Sugawara, Hiroyuki: *See—*
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,331,939, Cl. 372-92.000.

Sugiyama, Eiiti: *See—*
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, 4,331,451, Cl. 48-214.00A.

Sugiyama, Isao: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.

Sugiyama, Sakae: *See—*
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Sulzer Brothers Ltd.: *See—*
Kohl, Karl, 4,331,009, Cl. 66-203.000.

Sumitani, Koji: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,331,822, Cl. 585-482.000.

Sumitomo Chemical Company, Limited: *See—*
Nishikuri, Masao; Yamazaki, Michio; Kojima, Kiyoteru; Seino, Junzaburo; and Kenmochi, Hirohito, 4,331,584, Cl. 524-206.000.

Summers, Anthony C.; and MacAfee, Jerry D., to Jamesbury Corp. Butterfly valve. 4,331,319, Cl. 251-173.000.

Sunada, Masayoshi: *See—*
Terashima, Isamu; and Sunada, Masayoshi, 4,331,184, Cl. 141-94.000.

Sunaga, Yoshimitsu; and Honda, Satoru, to Pioneer Electronic Corporation. Control circuit for a reel motor driving circuit. 4,331,909, Cl. 318-6.000.

Sunbeam Corporation: *See—*
Mysicka, James C.; Stern, Ralph C.; and Augustine, Robert J., 4,331,067, Cl. 99-305.000.

Sunpower, Inc.: *See—*
Beale, William T., 4,330,993, Cl. 60-520.000.
Senft, James R., 4,330,992, Cl. 60-518.000.

Sutcliffe, Grenville G.; Bradley, Ronald F.; and Mercer, Paul D., to Ausley Corporation. Hook and shut-off bracket for automatic fuel nozzle. 4,331,190, Cl. 141-392.000.

Suzuki, Hitoshi: *See—*
Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, 4,331,286, Cl. 228-198.000.

Suzuki, Kouji: *See—*
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.

Suzuki, Kunio: *See—*
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.

Suzuki, Masayuki; Sato, Yuichi; and Kanno, Ken-ichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for evaluating electroless plating. 4,331,699, Cl. 427-8.000.

Suzuki, Tadao: *See*—
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

Suzuki, Toshiro: *See*—
Gregorian, Roubik; and Suzuki, Toshiro, 4,331,894, Cl. 307-520.000.

Suzuki, Yasunori, to Yasui Sangyo Co., Ltd. Mechanical safety device for a lift. 4,331,219, Cl. 187-8.500.

Svedberg, Per, to ASEA Aktiebolag. Two-pole overcurrent protection device. 4,331,884, Cl. 307-252.00C.

Svoronos, Jason, to Financial Mining-Industrial & Shipping Corporation. Method of producing pure alumina from alunite. 4,331,636, Cl. 423-126.000.

Swanson, Robert G. Poster frame. 4,330,952, Cl. 40-155.000.

Swarth, Oscar S. Compressed tablet-splitting holder. 4,330,936, Cl. 30-124.000.

Swasey, Archie N., to USM Corporation. Anti-backlash gearing. 4,331,040, Cl. 74-409.000.

Sweeney, Kevin M., to Simulaids, Inc. Cardiopulmonary resuscitation manikin with antiseptic cleaning system. 4,331,426, Cl. 434-265.000.

Sweeney, William M., to Texaco Inc. Exhaust filter rejuvenation method. 4,331,454, Cl. 55-20.000.

Swenson, Mark A.: *See*—
Morehouse, James H.; and Swenson, Mark A., 4,331,991, Cl. 360-106.000.

Swindell, William: *See*—
Barrett, Harrison H.; Swindell, William; Gordon, Scott; and Greivenkamp, John E., Jr., 4,331,877, Cl. 250-445.00T.

Swisher, James A. Lockable meter retention ring. 4,331,012, Cl. 70-164.000.

Swiss Aluminium Ltd.: *See*—
Brockmeyer, Jerry W., 4,331,621, Cl. 264-44.000.

SWS Silicones Corporation: *See*—
Martin, Eugene R., 4,331,797, Cl. 528-26.000.

Tadanier, John S.; Hallas, Robert; and Martin, Jerry R., to Abbott Laboratories. 2-Epi-fortimicin A and derivatives. 4,331,804, Cl. 424-180.000.

Tadokoro, Tomoo; Nakao, Masami; and Akagi, Toshimichi, to Toyo Kogyo Co., Ltd. Device for selective combustion in a multi-cylinder engine. 4,331,113, Cl. 123-198.00F.

Tagami, Eijiro: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Hiraharu, Teruo; and Yasukawa, Shiro, 4,331,784, Cl. 525-313.000.

Tagawa, Kazuaki: *See*—
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.

Taguchi, Hitoshi: *See*—
Kamada, Hiroshi; Saito, Kazumoto; Murata, Toshiaki; Miwa, Tadahisa; Goto, Masao; Fukuda, Toshiro; and Taguchi, Hitoshi, 4,331,447, Cl. 44-20.000.

Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, to Shin-Etsu Chemical Co., Ltd. Cis-6-undecene-1-chloride and a method for the preparation thereof. 4,331,820, Cl. 570-189.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Watanabe, Yoshiaki; Morimoto, Shigeo; and Omura, Sadafumi, 4,331,803, Cl. 536-7.200.

Takagi, Toshiyuki: *See*—
Kobayashi, Shigeharu; Takagi, Toshiyuki; and Hayashi, Chiaki, 4,330,968, Cl. 51-425.000.

Takahashi, Kihei, to Yoshida Kogyo K.K. Apparatus for producing a woven slide fastener stringer. 4,331,180, Cl. 139-35.000.

Takahashi, Soshiro: *See*—
Okamoto, Toshihiko; Isogai, Yo; Shudo, Koichi; and Takahashi, Soshiro, 4,331,807, Cl. 544-224.000.

Takahashi, Yasuo: *See*—
Ogawa, Ryota; and Takahashi, Yasuo, 4,331,389, Cl. 350-427.000.

Takaiwa, Masakazu: *See*—
Morita, Tomijiro; Takaiwa, Masakazu; and Matsuda, Toshiharu, 4,331,640, Cl. 423-242.000.

Takamatsu, Seietsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrical contact assembly. 4,331,375, Cl. 339-210.00R.

Takasaka, Nobuo: *See*—
Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, 4,331,820, Cl. 570-189.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,331,664, Cl. 424-246.000.

Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, to Director-General of the Agency of Industrial Science and Technology. Catalyst for methanation and method for the preparation thereof. 4,331,544, Cl. 252-443.000.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Syn isomer of 7-[2-cyclo(lower) alkoxyimino-2-(2-amino-or substituted aminothiazol-4-yl)acetamido]-3-lower alkanoyloxymethyl or heterocyclicthiomethyl-3-cephem-4-carboxylic acid compounds. 4,331,664, Cl. 424-246.000.

Takayama, Shuichi: *See*—
Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,331,864, Cl. 250-204.000.

Takayanagi, Shigeo: *See*—
Tamaki, Kazufuto; Iwazaki, Tadayoshi; Takayanagi, Shigeo; and Yamamoto, Saburo, 4,331,617, Cl. 261-72.00R.

Takeda Chemical Industries, Ltd.: *See*—
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, 4,331,598, Cl. 260-239.30P.

Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, to Chugoku Electric Power Co., Inc., The; Tohoku Electric Power Co., Inc.; Tokyo Electric Power Co., Inc., The; Chubu Electric Power Co., Inc., The; and Hitachi, Ltd. Ultrasonic probing apparatus. 4,331,034, Cl. 73-637.000.

Takemori, Satoshi: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,331,939, Cl. 372-92.000.

Takenaka, Shigeo; and Okada, Hisafumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Color picture tube and method for magnetically adjusting the color picture tube. 4,331,903, Cl. 313-413.000.

Takenoya, Hideaki: *See*—
Hanyu, Susumu; Tonomura, Yoshinobu; Takenoya, Hideaki; and Hara, Masanori, 4,331,090, Cl. 112-229.000.

Takimoto, Hiroyuki: *See*—
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,331,395, Cl. 352-27.000.

Talbert, Carroll G. Portable cutting device for attachment to blades of earth moving machines. 4,331,362, Cl. 299-37.000.

Talon, Inc.: *See*—
Lawrence, Charles T., 4,331,493, Cl. 156-66.000.

Tamaki, Kazufuto; Iwazaki, Tadayoshi; Takayanagi, Shigeo; and Yamamoto, Saburo, to Toyota Jidosha Hanbai Kabushiki Kaisha. Carburetor. 4,331,617, Cl. 261-72.00R.

Tamamura, Takeo: *See*—
Miyazaki, Kunio; Tamamura, Takeo; Iizuka, Tomio; Suzuki, Hitoshi; and Ochiai, Izumi, 4,331,286, Cl. 228-198.000.

Tanabe, Takeshi, to Sharp Kabushiki Kaisha. Gas sensor output/timer output controlled cooking utensil. 4,331,855, Cl. 219-10.55B.

Tanaka, Akira: *See*—
Nishida, Minoru; Hattori, Tadashi; and Tanaka, Akira, 4,331,899, Cl. 313-141.000.

Tanaka, Hiroshi: *See*—
Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, 4,331,627, Cl. 264-332.000.

Tanaka, Kiichiro: *See*—
Okamura, Yasushi; and Tanaka, Kiichiro, 4,332,023, Cl. 369-177.000.

Tanaka, Masato, to Sony Corporation. Splicing-point detection apparatus and method. 4,331,985, Cl. 360-13.000.

Tanaka, Mitsuo: *See*—
Mochizuki, Manabu; Harada, Masahide; Tanaka, Mitsuo; Suzuki, Kouji; Tagawa, Kazuaki; and Kobayashi, Kazuo, 4,331,100, Cl. 118-657.000.

Tanaka, Susumu; and Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Dry process developing method and device employed therefore. 4,331,757, Cl. 430-122.000.

Tani, Haruhisa: *See*—
Yazawa, Masahide; Yazawa, Hiroshi; Tani, Haruhisa; and Kurihara, Kazuhiko, 4,331,624, Cl. 264-160.000.

Tanida, Seiichi: *See*—
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, 4,331,598, Cl. 260-239.30P.

Taniguchi, Yoshifumi, to Leith, Mitsuko. Automobile exhaust control system. 4,331,213, Cl. 181-263.000.

Tanimoto, Fumio: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,331,569, Cl. 252-522.00R.

Taniyama, Takashi: *See*—
Amazawa, Kiyoshi; Mori, Masaharu; and Taniyama, Takashi, 4,331,885, Cl. 307-254.000.

Tarcza, Walter H.: *See*—
Boyd, David C.; Lu, Kun-Er; and Tarcza, Walter H., 4,331,768, Cl. 501-18.000.

Tarr, Lloyd A.; Taylor, John P.; and Young, John S., to GTE Automatic Electric Labs Inc. Apparatus for controlling and indicating the integrity of the connection of telephone subscribers to a switching system. 4,331,843, Cl. 179-175.20R.

Taschner, Wolfgang, to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer. Closure for a container having additional securing means. 4,331,257, Cl. 220-324.000.

Tateishi, Masaaki; and Shinbo, Shoji, to Alps Electric Co., Ltd. Mounting structure for printed circuit board. 4,332,001, Cl. 361-399.000.

Tavernier, Georges: *See*—
Pagay, Roger; and Tavernier, Georges, 4,331,498, Cl. 156-256.000.

Taylor, John P.: *See*—
Tarr, Lloyd A.; Taylor, John P.; and Young, John S., 4,331,843, Cl. 179-175.20R.

TDK Electronics Co., Ltd.: *See*—
Uehori, Tatsuo; Watanabe, Akio; and Ide, Tosiaki, 4,331,489, Cl. 148-105.000.

Tech Engineering & Design: *See*—
Broadwater, Ronald L.; Haynes, Russell R.; and Mitry, Samah A., 4,331,154, Cl. 128-677.000.

Teed, Richard K., to Riegel Textile Corporation. Apparatus and process for successively fabricating disposable diapers having multi-layer interior absorbent pads. 4,331,501, Cl. 156-383.000.

Teijin Limited: *See*—
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,331,800, Cl. 528-289.000.
Kudo, Akira; Inata, Hiroo; and Ogasawara, Makoto, 4,331,697, Cl. 427-2.000.

Teijin Petrochemical Industries Ltd.: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,331,822, Cl. 585-482.000.

Tektronix, Inc.: *See*—
Helderman, Earl R.; and Zimmerman, Robert R., 4,331,476, Cl. 75-214.000.

Teleflex Incorporated: *See*—
Bennett, William G., 4,331,041, Cl. 74-501.50R.

Tempmaster Corporation: *See*—
Dean, Raymond H., 4,331,291, Cl. 236-49.000.

Ten Cate Sports B.V.: *See*—
Moller, Jens T. T., 4,331,093, Cl. 114-39.000.

Tenneco Chemicals, Inc.: *See*—
Feldman, Martin L.; and Landau, Marvin, 4,331,575, Cl. 106-264.000.

Tenneco, Inc.: *See*—
Petrak, Harry A., 4,331,210, Cl. 180-70.00R.

Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, to Hitachi, Ltd. Method of jointing pipes by friction welding. 4,331,280, Cl. 228-112.000.

Terada, Masafumi: *See*—
Nakajima, Takao; Terada, Masafumi; and Mori, Tohru, 4,331,767, Cl. 435-288.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem and cepham compounds. 4,331,665, Cl. 424-246.000.

Terashima, Isamu; and Sunada, Masayoshi, to Hitachi, Ltd. Developer quality monitoring device. 4,331,184, Cl. 141-94.000.

Terekhin, Vladimir I.: *See*—
Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy, 4,331,241, Cl. 209-589.000.

Terminal Data Corporation: *See*—
Therien, Robert D.; Kraemer, Edward J.; and Rudy, Michael W., 4,331,275, Cl. 226-188.000.

Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,331,605, Cl. 549-314.000.

Tetra Pak Developpement SA: *See*—
Madsen, Finn T.; and Kjaerbye-Petersen, Steffen, 4,331,499, Cl. 156-304.500.

Tetra Pak International AB: *See*—
Lothman, Stig A., 4,331,288, Cl. 229-17.00R.

Texaco Development Corp.: *See*—
Hunter, Walter D., 4,331,796, Cl. 526-287.000.

Texaco Inc.: *See*—
Maham, Robert M., 4,331,536, Cl. 210-95.000.
McCall, Richard H., 4,330,926, Cl. 29-526.00R.
Sweeney, William M., 4,331,454, Cl. 55-20.000.

Texas Instruments Incorporated: *See*—
Hunter, William R., 4,331,708, Cl. 427-93.000.
Johnson, Larry K., 4,331,851, Cl. 200-159.00B.
Walstra, Hidde; and Vonk, Jaap, 4,331,615, Cl. 261-39.00C.
Wiggins, Richard H., Jr.; and Brantingham, George L., 4,331,836, Cl. 179-1.0SM.

Textron Inc.: *See*—
Vanasse, Raymond A., 4,331,240, Cl. 206-621.000.

Theeuwes, Felix, to ALZA Corporation. Laminate made of a cellulose acetate layer and an elastomeric material layer. 4,331,728, Cl. 428-215.000.

Thelander, Lars: *See*—
Eckstein, Fritz; Hobbs, John B.; Skoog, Lambert; Bjursell, Gunnar; and Thelander, Lars, 4,331,662, Cl. 424-180.000.

Theodor Hymmen KG., Firma: *See*—
Girola, Umberto, 4,331,073, Cl. 100-154.000.

Therien, Robert D.; Kraemer, Edward J.; and Rudy, Michael W., to Terminal Data Corporation. Orthogonal film drive. 4,331,275, Cl. 226-188.000.

Thibodeaux, Leon J.: *See*—
Dittman, Donald C.; Kendrick, Paul W.; and Thibodeaux, Leon J., 4,331,880, Cl. 290-38.00R.

Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Device for sterilizing false teeth. 4,331,859, Cl. 219-521.000.

Thompson, David A., to Corning Glass Works. Low liquidus glasses for television tube faceplates. 4,331,770, Cl. 501-62.000.

Thompson, Robert L.; and Scotcher, Douglas E., to Nu-View Pty. Ltd. Attachment means. 4,330,898, Cl. 15-250.320.

Thomson-Brandt: *See*—
Rilly, Gerard, 4,331,908, Cl. 315-411.000.

Thomson-CSF: *See*—
Coussot, Gerard; and Hartemann, Pierre, 4,331,022, Cl. 73-4.00R.
Lacomme, Philippe, 4,331,958, Cl. 343-16.00M.

Thorberg, Seth-Olov: *See*—
Lindberg, Ulf H. A.; Ross, Svante B.; Thorberg, Seth-Olov; and Ogren, Sven O., 4,331,684, Cl. 424-311.000.

Thornber, Geoffrey, to Brunswick Corporation. Tuning apparatus for a radio frequency power device. 4,331,935, Cl. 331-90.000.

Thresh, Henry R.: *See*—
Killpatrick, Don H.; and Thresh, Henry R., 4,330,920, Cl. 29-423.000.

Throckmorton, James R., to Minnesota Mining and Manufacturing Co. Process for the preparation of 4-arylthioanilines. 4,331,817, Cl. 564-430.000.

Throp, Benjamin A., to Huyck Corporation. Apparatus for aiding water removal of a paper web by independently controlling the steam flow in a plurality of compartments. 4,330,947, Cl. 34-54.000.

Thuillier, Denis: *See*—
Pargamin, Laurent; and Thuillier, Denis, 4,331,833, Cl. 174-179.000.

Thuresson af Ekenstam, Bo: *See*—
Branemark, Per I.; and Thuresson af Ekenstam, Bo, 4,330,891, Cl. 3-1.000.

Thurston, Brian D. Disc clamping device. 4,332,025, Cl. 369-270.000.

Tiemann, Gerhard: *See*—
Kammann, Knut; and Tiemann, Gerhard, 4,331,055, Cl. 83-318.000.

TII Industries, Inc.: *See*—
Simokat, Frank L., 4,331,838, Cl. 179-17.00E.

Tillitt, Ralph S.: *See*—
Courneya, Calice G., 4,330,946, Cl. 34-1.000.

Tjoeng, Foe-Siong: *See*—
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,331,595, Cl. 260-112.50R.

Todo, Naoyuki: *See*—
Takaya, Haruo; Hosoya, Tadasuke; Ogawa, Kiyoshi; Shin, Shigemitsu; Araki, Michio; Suzuki, Kunio; and Todo, Naoyuki, 4,331,544, Cl. 252-443.000.

Tohoku Electric Power Co., Inc.: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Toki, Tadaaki: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Haga, Takahiro; Toki, Tadaaki; Nagatani, Kuniaki; and Imai, Osamu, 4,331,670, Cl. 424-263.000.

Tokico Ltd.: *See*—
Koshimizu, Naganori; and Aono, Masami, 4,331,364, Cl. 303-24.00F.

Tokuda, Takuro; Ikeda, Susumu; and Kubota, Yoshikazu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Control of plant virus diseases. 4,331,685, Cl. 424-325.000.

Tokyo Electric Power Co., Inc., The: *See*—
Takeda, Hiroyuki; Iseki, Ichio; Kawai, Katsumi; Okajima, Hiroyuki; Kajiyama, Sigeru; Sugiyama, Sakae; and Kanda, Kimio, 4,331,034, Cl. 73-637.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Sato, Masaru, 4,331,392, Cl. 351-14.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Oda, Yasutaka; and Hamaoka, Hiromi, 4,331,987, Cl. 360-78.000.
Shimizu, Tatuo; Ishiwata, Hisao; Sano, Tetsu; and Aramaki, Yoshimitsu, 4,331,898, Cl. 313-59.000.
Suzuki, Masayuki; Sato, Yuichi; and Kanno, Ken-ichi, 4,331,699, Cl. 427-8.000.
Takamatsu, Seietsu, 4,331,375, Cl. 339-210.00R.
Takenaka, Shigeo; and Okada, Hisafumi, 4,331,903, Cl. 313-413.000.

Tomalia, Donald A.: *See*—
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,331,785, Cl. 525-367.000.

Tomasi, Thomas G.; and Bell, Marilyn A., to American Hoechst Corporation. Efficient synthetic thickener composition. 4,331,572, Cl. 524-238.000.

Tomatis, Stefano. Curd making and separating machine. 4,331,069, Cl. 99-456.000.

Tomita, Yoshifumi: *See*—
Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, 4,331,752, Cl. 430-28.000.

Tonomura, Yoshinobu: *See*—
Hanyu, Susumu; Tonomura, Yoshinobu; Takenoya, Hideaki; and Hara, Masanori, 4,331,090, Cl. 112-229.000.

Topfer, Dieter, to Hoechst Aktiengesellschaft. Metering device for lacquer. 4,331,099, Cl. 118-413.000.

Torre, Jean-Paul; and Demit, Joel, to Association pour la Recherche. Method of manufacturing nitrided silicon parts. 4,331,772, Cl. 501-97.000.

Towers, David M.: *See*—
Godrich, Jonathan E.; and Towers, David M., 4,331,031, Cl. 73-159.000.

Toyama, Tadao, to Fuji Photo Film Co., Ltd. Process of using light-sensitive o-quinone diazide material to make aluminum oxide nameplate. 4,331,479, Cl. 430-147.000.

Toyo Engineering Corporation: *See*—
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, 4,331,451, Cl. 48-214.00A.

Toyo Jozo Kabushiki Kaisha: *See*—
Matsumura, Eiji; Ishikawa, Hidehiko; and Misaki, Hideo, 4,331,763, Cl. 435-190.000.

Toyo Kogyo Co., Ltd.: *See*—
Tadokoro, Tomoo; Nakao, Masami; and Akagi, Toshimichi, 4,331,113, Cl. 123-198.00F.

Toyota, Akinori: *See*—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,331,561, Cl. 252-429.00B.

Toyota Jidosha Hanbai Kabushiki Kaisha: *See*—
Tamaki, Kazufuto; Iwazaki, Tadayoshi; Takayanagi, Shigeo; and Yamamoto, Saburo, 4,331,617, Cl. 261-72.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, 4,331,120, Cl. 123-519.000.
Kato, Yuzo; Kako, Mikitoshi; and Kadowaki, Kunio, 4,331,616, Cl. 261-50.00A.
Sekimori, Toshiyuki; and Shigenobu, Hiromichi, 4,331,323, Cl. 254-323.000.

Treudler, Ilse: *See*—
Voelger, Karl-Dieter; and Treudler, Ilse, 4,331,687, Cl. 424-330.000.

Tri-Made Products, Inc.: *See*—
Duncan, Gail F.; Browning, Emerson F.; and Rotterman, Karl, 4,331,267, Cl. 222-153.000.

Trio Kabushiki Kaisha: *See*—
Shibata, Isumi; Sakai, Kazumasa; and Sanpei, Nobuyuki, 4,331,930, Cl. 330-267.000.

Trudeau, William H.; and Smith, Joseph E., to Gulf & Western Manufacturing Company. Sealed compound bearing. 4,331,367, Cl. 308-26.000.

TRW Inc.: *See*—
Kiefer, Karl, 4,331,203, Cl. 166-339.000.

Trygg, Lars E. Liquid dispensing device. 4,331,187, Cl. 141-218.000.

Tsai, Connie S. J.: *See*—
Wiesner, Karel; Marini-Bettolo, Rinaldo; Tsai, Connie S. J.; and Tsai, Thomas Y. R., 4,331,802, Cl. 536-5.000.

Tsai, Thomas Y. R.: *See*—
Wiesner, Karel; Marini-Bettolo, Rinaldo; Tsai, Connie S. J.; and Tsai, Thomas Y. R., 4,331,802, Cl. 536-5.000.

TSI Incorporated: *See*—
Du Vall, Zell, 4,331,037, Cl. 73-861.090.

Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Motorized two-wheeled vehicle. 4,331,212, Cl. 180-230.000.

Tsuboshima, Kosaku: *See*—
Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,331,864, Cl. 250-204.000.

Tsukatani, Ichiro: *See*—
Sudo, Masatoshi; and Tsukatani, Ichiro, 4,331,488, Cl. 148-36.000.

Tsunekawa, Yuzo: *See*—
Kato, Toshihiro; and Tsunekawa, Yuzo, 4,330,925, Cl. 29-464.000.

Tsuo, Yuan H.: *See*—
United States of America, National Aeronautics and Space Administration; Miller, William E.; Sher, Arden; and Tsuo, Yuan H., 4,331,873, Cl. 250-330.000.

Tsutsui, Ken: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Kusano, Chushiro; Hirai, Tadaaki; and Maruyama, Eiichi, 4,331,506, Cl. 156-633.000.

Tucker, Gordon H.: *See*—
Fitch, Robert E.; and Tucker, Gordon H., 4,331,086, Cl. 110-204.000.
Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., 4,331,085, Cl. 110-203.000.

Tucker, Hartwell F.: *See*—
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,330,897, Cl. 15-246.000.

Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., to Octa, Inc. Floor machine. 4,330,897, Cl. 15-246.000.

Tudisco, Vincent J., to White Development Corporation. Flexible handle for percussive tool employing improved shaft member. 4,331,193, Cl. 145-29.00R.

Tur, Wladimir, to Uni-Chemie AG. Cosmetic compositions and processes containing ether and acyl derivatives of 3,7,11-trimethyl-2,6,10-dodecatriene-1-ol. 4,331,655, Cl. 424-59.000.

Turner, Edward W.: *See*—
Hardigg, James S.; and Turner, Edward W., 4,331,748, Cl. 429-175.000.

Tuzuki, Yoshinori: *See*—
Hongo, Yasuo; Tuzuki, Yoshinori; and Miyawaki, Masao, 4,331,773, Cl. 501-128.000.

Tweedy of Burnley Limited: *See*—
Bradshaw, William, 4,331,690, Cl. 426-233.000.

Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H. Exit gas control for flame stabilization and performance tuning of starved-air auger combustor. 4,331,085, Cl. 110-203.000.

Tyer, Robert C.: *See*—
Fitch, Robert E.; and Tyer, Robert C., 4,331,084, Cl. 110-186.000.

Tyran, Leo W., to Du Pont de Nemours, E. I., and Company. Process of making flake silver powders with chemisorbed monolayer of dispersant. 4,331,714, Cl. 427-216.000.

Tyrrell, F. Peter: *See*—
Bryan, T. James; Burton, Jack D.; and Tyrrell, F. Peter, 4,331,984, Cl. 358-275.000.

Uehori, Tatsuo; Watanabe, Akio; and Ide, Tosiaki, to TDK Electronics Co., Ltd. Process for producing magnetic powder. 4,331,489, Cl. 148-105.000.

Uhlig, Heinrich; Langheinrich, Klaus; and Hendricks, Udo-Winfried, to Bayer Aktiengesellschaft. Process for dyeing cellulose textile materials by the padding process. 4,331,442, Cl. 8-564.000.

Uibel, Paul-Ulrich: *See*—
Dorr, Manfred; Haase, Georg; and Uibel, Paul-Ulrich, 4,330,900, Cl. 15-339.000.

Ukita, Kenkichi; Nakano, Tatsuo; and Kishi, Ikuji, to Denki Kagaku Kogyo Kabushiki Kaisha. Two liquid type adhesive composition comprising a cobalt salt cure accelerator in one portion and a hydroperoxide with an aromatic amine and/or a pyridine derivative cure accelerator in the second portion. 4,331,795, Cl. 526-273.000.

Ungermann, Ralph K.: *See*—
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,332,008, Cl. 364-200.000.

Uni-Chemie AG: *See*—
Tur, Wladimir, 4,331,655, Cl. 424-59.000.

Union Carbide Corporation: *See*—
Baskent, Feyyaz O.; and Sandner, Michael R., 4,331,555, Cl. 252-351.000.
Hanna, Russell, 4,331,577, Cl. 524-819.000.
Izod, Thomas P. J., 4,331,694, Cl. 426-422.000.
Ritscher, James S., 4,331,644, Cl. 423-437.000.
Watson, Stuart L., Jr.; and Carter, Richard G., 4,331,704, Cl. 427-54.100.

Union Oil Company of California: *See*—
Hass, Robert H.; and Albertson, Walter, 4,331,639, Cl. 423-235.000.

United States of America
Agriculture: *See*—
Soderholm, Leo H.; and Andrew, James F., 4,331,881, Cl. 290-44.000.

Air Force: *See*—
Allan, David W.; and Garvey, R. Michael, 4,331,933, Cl. 331-3.000.
Allinikov, Sidney, 4,331,871, Cl. 250-302.000.
Baker, James G., 4,331,391, Cl. 350-463.000.
Schlesinger, S. Perry; Marshall, Thomas C.; McDermott, David B.; Granatstein, Victor L.; Parker, Robert K.; Sprangle, Phillip A.; and Efthimion, Philip C., 4,331,936, Cl. 372-2.000.

Army: *See*—
Morrison, Clyde A.; and Leavitt, Richard P., 4,331,934, Cl. 331-79.000.
Rittenbach, Otto E., 4,331,925, Cl. 328-42.000.

Energy: *See*—
Galloway, Terry R., 4,331,632, Cl. 422-206.000.
Killpatrick, Don H.; and Thresh, Henry R., 4,330,920, Cl. 29-423.000.

Health and Human Services: *See*—
Lopez, Hector; and Smith, Stephen W., 4,331,021, Cl. 73-1.0DV.
Myers, Charles E., Jr.; Doroshow, James H.; and Locker, Gershon Y., 4,331,648, Cl. 424-10.000.
Williams, Vincent P.; and Sandifer, Shelly S., 4,331,054, Cl. 83-224.000.

Interior: *See*—
Krawza, Walter G.; and Savanick, George A., 4,331,975, Cl. 358-100.000.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Anderson, Tage O. Control means for a solid state crossbar switch. 4,331,956, Cl. 340-825.890.
Miller, William E.; Sher, Arden; and Tsuo, Yuan H. Photocapacitive image converter. 4,331,873, Cl. 250-330.000.
Richter, Robert. Solid electrolyte cell. 4,331,742, Cl. 429-33.000.

National Aeronautics and Space Administration: *See*—
Heyman, Joseph S., 4,331,422, Cl. 433-125.000.
Sheibley, Dean W., 4,331,746, Cl. 429-144.000.

Navy: *See*—
Crisci, Joseph R.; De Nale, Robert; and Franke, Gene L., 4,331,857, Cl. 219-137.0WM.
Lovejoy, Richard E., 4,331,096, Cl. 114-218.000.
Morris, Hayden; and Bis, Richard F., 4,330,932, Cl. 29-579.000.
Phillips, Raymond J., 4,331,374, Cl. 339-177.00E.
Putman, Stephen; and Erickson, Frederick L., 4,330,895, Cl. 441-22.000.
Sternberg, Robert L.; and Anderson, Warren A., 4,332,018, Cl. 367-150.000.

U.S. Philips Corporation: *See*—
de Vrijer, Bertus; Eijkelenboom, Leonard C. H.; and de Ridder, Jan, 4,331,901, Cl. 313-315.000.
Johanns, Johannes H. M.; and van Eck, Arnoldus H. M., 4,331,904, Cl. 313-417.000.
Magendans, Frederik; and Van Rheenen, Bernhard J. P., 4,331,902, Cl. 313-330.000.
Notelteirs, Victor R.; and Siaens, Gustaaf F. R., 4,331,900, Cl. 313-222.000.

United States Surgical Corporation: *See*—
Green, David Y., 4,331,277, Cl. 227-19.000.

United Technologies Corporation: *See*—
Brown, Robert T.; and Nighan, William L., 4,331,937, Cl. 372-74.000.

Unitika Ltd.: *See*—
Nakajima, Hiroshi; Nagata, Kazuhiko; Kageyama, Masao; Suga, Toyohiko; Suzuki, Tadao; and Motosugi, Kenzo, 4,331,762, Cl. 435-190.000.

University of Nebraska, The Board of Regents of the: *See*—
Kumar, Pullatikurthi P., 4,331,131, Cl. 128-1.200.

University of Rochester, The: *See*—
Rizzo, Joseph E., 4,331,891, Cl. 307-427.000.

University Patents, Inc.: *See*—
Apple, Howard P.; and Dauchot, Paul J., 4,331,156, Cl. 128-688.000.
Barrett, Harrison H.; Swindell, William; Gordon, Scott; and Greivenkamp, John E., Jr., 4,331,877, Cl. 250-445.00T.

Upjohn Company, The: *See*—
Braymer, George W., Jr., 4,331,233, Cl. 206-221.000.

Hoeksema, Herman; and Siechta, Libor, 4,331,659, Cl. 424-122.000.
Urban, Todd A.; and Oxenreider, Terry R., to General Battery Corporation. Basket design. 4,331,325, Cl. 269-43.000.
USM Corporation: *See*—
Elliott, Richard M.; Provanzano, Salvatore R.; and Sprague, Gordon V., Jr., 4,331,011, Cl. 69-6.500.
Swasey, Archie N., 4,331,040, Cl. 74-409.000.
USV Pharmaceutical Corporation: *See*—
Golec, Frederick A., Jr.; and Auerbach, Joseph, 4,331,600, Cl. 548-472.000.
Uwano, Tomoki, to Matsushita Electric Industrial Co., Ltd. Solid-state MIC oscillator. 4,331,940, Cl. 331-99.000.
Valdiserri, Leo L.; and Bullock, Elyse M., to Borg-Warner Chemicals, Inc. Light-stable polypropylene compositions. 4,331,585, Cl. 524-103.000.
Valkov, Alexei A.: *See*—
Smirin, Lev N.; Kiselev, Vladimir P.; Panin, Vladimir I.; Terekhin, Vladimir I.; Valkov, Alexei A.; Basin, Leonid A.; and Shortombaev, Amangeldy, 4,331,241, Cl. 209-589.000.
Vanasse, Raymond A., to Textron Inc. Staple stick package. 4,331,240, Cl. 206-621.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. Van der Lely N.V. Raking machines. 4,330,986, Cl. 56-377.000.
van der Lely, Cornelis. Tank wagon. 4,331,342, Cl. 280-5.00C.
van de Zee, Jelle; and Breunis, Arien, to Wavin B.V. Socket pipe. 4,331,625, Cl. 264-249.000.
van Eck, Arnoldus H. M.: *See*—
Johanns, Johannes H. M.; and van Eck, Arnoldus H. M., 4,331,904, Cl. 313-417.000.
VanLokeren, David C., to International Business Machines Corp. Dual cavity drop generator. 4,331,964, Cl. 346-75.000.
Vanoudheusden, Bernard: *See*—
Joccotton, Jacky H.; and Vanoudheusden, Bernard, 4,332,028, Cl. 371-21.000.
Van Pool, Joe, to Phillips Petroleum Company. Apparatus for incineration of sulfur plant tail gas. 4,331,630, Cl. 422-160.000.
Van Rheenen, Bernhard J. P.: *See*—
Magendans, Frederik; and Van Rheenen, Bernhard J. P., 4,331,902, Cl. 313-330.000.
Van Weemen, Bauke K.: *See*—
Dawson, Edward C.; Homan, Jan D. H.; and Van Weemen, Bauke K., 4,331,761, Cl. 435-188.000.
Vargo, Steve J.: *See*—
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., 4,331,719, Cl. 427-393.500.
VEB Pentacon Dresden Kamera- und Kinowerke: *See*—
Zeibig, Siegfried, 4,331,408, Cl. 354-191.000.
Verburgh, Martin B.: *See*—
Kapaan, Hendrikus J.; and Verburgh, Martin B., 4,330,911, Cl. 29-148.40A.
Vereinigte Flugtechnische Werke-Fokker GmbH: *See*—
Schnabel, Siegfried, 4,331,410, Cl. 408-94.000.
Vetter, Craig W., to First Champaign Corporation. Fairing mounting apparatus. 4,331,344, Cl. 280-270.000.
Vickers Limited: *See*—
Williams, Thomas D., 4,331,075, Cl. 101-91.000.
Victor Company of Japan, Ltd.: *See*—
Kinjo, Hisao; and Ozawa, Keiji, 4,331,976, Cl. 358-128.600.
Vigor, Charles W.: *See*—
Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,331,631, Cl. 422-180.000.
Viktorovitch, Pierre: *See*—
Chenevas-Paule, Andre; Le Goascoz, Vincent; and Viktorovitch, Pierre, 4,331,486, Cl. 148-1.500.
Vilotti, Ronald T. Feather plucking machine. 4,330,903, Cl. 17-11.10R.
Vin Dick, James; and Spector, George. Christmas tree. 4,331,720, Cl. 428-9.000.
Viscosuisse S.A.: *See*—
Schmieder, Heinrich; and Heider, Rolf, 4,330,989, Cl. 57-227.000.
Visi-Trol Engineering Company: *See*—
Galarowic, Lawrence A., 4,331,228, Cl. 198-341.000.
Viskochil, Stephen R., to Priam Corporation. Magnetic disc file having dual lock mechanism. 4,331,989, Cl. 360-97.000.
Vissers, Hermanus H.; and Oosterling, Pieter A., to Multinorm B.V. Mowing device. 4,330,982, Cl. 56-192.000.
Vitaloni, Alberto, to Grenco S.p.A. Portable power supply unit. 4,331,883, Cl. 307-150.000.
Vize, Robert M.: *See*—
Rinaldo, James D.; and Vize, Robert M., 4,331,185, Cl. 141-95.000.
Vock, Manfred H.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,331,611, Cl. 260-464.000.
Voelger, Karl-Dieter; and Treudler, Ilse, to Rohm Pharma GmbH. Treatment of Parkinson's disease. 4,331,687, Cl. 424-330.000.
Voges, Christoph: *See*—
Habbel, Wolfgang; Prior, Josef; Schulte, Hans; and Voges, Christoph, 4,331,078, Cl. 102-202.110.
Volk, John A.: *See*—
Severson, Asbjorn M.; and Volk, John A., 4,331,036, Cl. 73-861.050.
Volkswagenwerk Aktiengesellschaft: *See*—
Heidemeyer, Paulus; Zimmermann, Frank; and Scholz, Romanus, 4,331,226, Cl. 192-0.076.
Piech, Ferdinand; Dorpmund, Heinz; Oberpichler, Gerd; Honig, Ernst-August; and Schmidt, Dieter, 4,331,045, Cl. 74-867.000.
Vonk, Jaap: *See*—
Walstra, Hidde; and Vonk, Jaap, 4,331,615, Cl. 261-39.00C.
Vorwerk & Co. Interholding GmbH: *See*—
Dorr, Manfred; Haase, Georg; and Uibel, Paul-Ulrich, 4,330,900, Cl. 15-339.000.
Sobczyk, Erhard, 4,331,351, Cl. 285-7.000.
Voss, Earl, to Diversified Electronics, Inc. Phase unbalance protector. 4,331,995, Cl. 361-85.000.
Voyager Marine Products, Inc.: *See*—
Noel, Brian F., 4,331,356, Cl. 292-281.000.
Vulcan Materials Company: *See*—
Wilson, Harold P., 4,331,518, Cl. 204-43.00S.
Vyzkumny ustav zuslechtovaci: *See*—
Dvorsky, Drahomir; and Cerovsky, Karel, 4,331,441, Cl. 8-542.000.
Wacek, Rudolph W.: *See*—
Miller, Jonathan; Fegan, Richard; Berfield, Robert C.; Hiester, Kenneth R.; and Wacek, Rudolph W., 4,330,899, Cl. 15-326.000.
Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See*—
Behensky, Gerhard; and Lux, Wilhelm, 4,331,698, Cl. 427-50.000.
Wada, Masahiko; and Shirogane, Junji, to Kabushiki Kaisha Riken. Apparatus for grinding finish of piston rings. 4,330,963, Cl. 51-157.000.
Wafer, John A.: *See*—
Engel, Joseph C.; Wafer, John A.; Elms, Robert T.; and Saletta, Gary F., 4,331,999, Cl. 361-94.000.
Wagner, Dennis L., to Pet Incorporated. Open hearth oven. 4,331,858, Cl. 219-405.000.
Wagner, Kuno: *See*—
Sommerfeld, Claus-Dieter; Haas, Peter; Wagner, Kuno; and Kapps, Manfred, 4,331,778, Cl. 521-129.000.
Waite, Frederick A.: *See*—
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,331,490, Cl. 149-46.000.
Waitkus, Phillip A.: *See*—
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,601, Cl. 548-461.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,331,794, Cl. 526-262.000.
Wajaroff, Theodor, to Wella Aktiengesellschaft. Compositions and methods for permanent waving of hair. 4,331,167, Cl. 132-7.000.
Wakabayashi, Yoiti: *See*—
Terabayashi, Takao; Waragai, Kenichi; Kamada, Atsuya; Kobayashi, Masaru; Ochiai, Izumi; and Wakabayashi, Yoiti, 4,331,280, Cl. 228-112.000.
Wakasugi, Hideaki: *See*—
Yamaguchi, Noboru; and Wakasugi, Hideaki, 4,332,002, Cl. 361-432.000.
Walatka, Vernon V., Jr.: *See*—
Hinnenkamp, James A.; and Walatka, Vernon V., Jr., 4,331,641, Cl. 423-277.000.
Wald Manufacturing Company: *See*—
Humlong, Robert F., 4,331,270, Cl. 224-32.00R.
Walker, Michael J., to Lucas Industries Limited. Test apparatus for testing internal combustion engine electronic spark ignition systems. 4,331,921, Cl. 324-380.000.
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Wallis, Robert L.: *See*—
Goddard, Denis A.; and Wallis, Robert L., 4,331,511, Cl. 162-352.000.
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Brodowski, Walter; and Wallrabenstein, Michael, 4,331,588, Cl. 524-439.000.
Walstra, Hidde; and Vonk, Jaap, to Texas Instruments Incorporated. Fuel supply system with automatic choke. 4,331,615, Cl. 261-39.00C.
Walters, Charles W.: *See*—
Grove, John L.; Merz, Ernest J.; and Walters, Charles W., 4,331,215, Cl. 182-2.000.
Walters, Klemens C. Telescoping trailer for boats and the like. 4,331,346, Cl. 280-414.100.
Walters, William O.: *See*—
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Wapner, Herbert H., to Baka Manufacturing Company, Inc. Band for supporting tracheostomy tubes or the like. 4,331,144, Cl. 128-207.170.
Waragai, Kenichi: *See*—
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Ward, Russell G. Frameless back pack with tent. 4,331,272, Cl. 224-154.000.
Warihashi, [illegible]anori. Windshield washer. 4,331,295, Cl. 239-284.00R.
Warlick, Harley A. Tube squeezer-dispenser with drip prevention. 4,331,265, Cl. 222-101.000.
Wart, William M.: *See*—
Bauer, James J.; Wart, William M.; and Hansen, Howard C., 4,331,209, Cl. 180-54.00A.
Washburn, Malcolm E., to Norton Company. High density silicon oxynitride. 4,331,771, Cl. 501-97.000.
Washington State University Research Foundation, Inc.: *See*—
Poovaiah, Bachettira W.; and Moulton, Gary A., 4,331,691, Cl. 426-302.000.

Watanabe, Akio: *See*—
Uehori, Tatsuo; Watanabe, Akio; and Ide, Tosiaki, 4,331,489, Cl. 148-105.000.
Watanabe, Yoshiaki; Morimoto, Shigeo; and Omura, Sadafumi, to Taisho Pharmaceutical Co., Ltd. Novel erythromycin compounds. 4,331,803, Cl. 536-7.200.
Watson, Stuart L., Jr.; and Carter, Richard G., to Union Carbide Corporation. Acrylated silicones as radiation-curable overprint varnishes. 4,331,704, Cl. 427-54.100.
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Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., 4,331,631, Cl. 422-180.000.
Wavin B.V.: *See*—
van de Zee, Jelle; and Breunis, Arien, 4,331,625, Cl. 264-249.000.
Webber, C. Eugene. Continuous casting machine. 4,331,195, Cl. 164-431.000.
Weber, John W., to Norfab Corporation. Heat resistant and protective fabric and yarn for making the same. 4,331,729, Cl. 428-252.000.
Weber, Klaus: *See*—
Schippers, Heinz; Rehn, Karl-Heinz; Weber, Klaus; Middelmann, Heinz; and Schulte, Karl-Heinz, 4,330,987, Cl. 57-1.00R.
Weber-Unger, Georg E. H. Garment in particular a bodice or swimsuit. 4,330,890, Cl. 2-336.000.
Webster, David F. Tire inspection and recording device. 4,331,030, Cl. 73-146.000.
Webster, Ebbinghaus & Co. (WECO): *See*—
Ebbinghaus, Walter; Weisbrodt, Norbert; Optenhovel, Bernd; and Wennel, Heinz, 4,331,377, Cl. 339-272.00A.
Wehrli, Rudolf: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,331,682, Cl. 424-305.000.
Weichert, Norbert, to Siemens Aktiengesellschaft. Apparatus for x-ray fluoresence analysis. 4,331,870, Cl. 250-280.000.
Weider, Franz: *See*—
Zabrocki, Karl; Bottenbruch, Ludwig; and Weider, Franz, 4,331,573, Cl. 524-199.000.
Weileder, Peter: *See*—
Marquis, Robert P.; and Weileder, Peter, 4,331,305, Cl. 242-118.110.
Weingrod, Irving: *See*—
Ingram, Arthur J.; and Weingrod, Irving, 4,331,831, Cl. 174-52.0FP.
Weisbrodt, Norbert: *See*—
Ebbinghaus, Walter; Weisbrodt, Norbert; Optenhovel, Bernd; and Wennel, Heinz, 4,331,377, Cl. 339-272.00A.
Welch, Melvin B.; and Dietz, Richard E., to Phillips Petroleum Company. Polymerization catalyst and process. 4,331,558, Cl. 252-429.00B.
Welch, Melvin B.: *See*—
Rohlfing, Raymond G.; Welch, Melvin B.; and Dietz, Richard E., 4,331,791, Cl. 526-125.000.
Wella Aktiengesellschaft: *See*—
Wajaroff, Theodor, 4,331,167, Cl. 132-7.000.
Wellman Thermal Systems Corporation: *See*—
D'Antonio, Nicholas F., 4,331,856, Cl. 219-121.00P.
Wells, Roger, to Weyerhaeuser Company. Steam shower for improving paper moisture profile. 4,331,510, Cl. 162-290.000.
Welp, Ewald G.: *See*—
Hombach, Theodor; and Welp, Ewald G., 4,331,056, Cl. 83-666.000.
Wendell, David E. Hot tap apparatus and method. 4,331,170, Cl. 137-15.000.
Wennel, Heinz: *See*—
Ebbinghaus, Walter; Weisbrodt, Norbert; Optenhovel, Bernd; and Wennel, Heinz, 4,331,377, Cl. 339-272.00A.
Wentz, John L., to Westinghouse Electric Corp. Electro-optical modulator for randomly polarized light. 4,331,387, Cl. 350-384.000.
Wenzel, Wolfgang; and Meckel, Walter, to Bayer Aktiengesellschaft. Aqueous dispersions or solutions of oligomeric or polymeric plastics, a process for their production and their use. 4,331,717, Cl. 427-389.700.
Werner, John A.; Wilson, Charles A.; and Mixan, Craig E., to Dow Chemical Company, The. Preparation of 2,3-dichloro-5-trichloromethylpyridine. 4,331,811, Cl. 546-345.000.
Werner Kammann Maschinenfabrik GmbH: *See*—
Kammann, Knut; and Tiemann, Gerhard, 4,331,055, Cl. 83-318.000.
Werner, Walter M., to AMP Incorporated. Feed-thru connection. 4,330,906, Cl. 24-136.00R.
Werner, Wolfgang: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Werner, Wolfgang, 4,331,760, Cl. 435-19.000.
West Company, The: *See*—
Brignola, Dominic J., 4,331,146, Cl. 128-218.0DA.
West, Martin M.; and Zavitsanos, Peter D., to General Electric Co. Composite high explosives for high energy blast applications. 4,331,080, Cl. 102-301.000.
Western Electric Company, Inc.: *See*—
Blair, Thomas G., Jr.; and Kummer, Alfred C., 4,330,935, Cl. 29-884.000.
Westinghouse Electric Corp.: *See*—
Conway, Harry E.; and Hughes, John W., 4,331,830, Cl. 174-16.00R.
Engel, Joseph C.; Elms, Robert T.; Mercier, Bernard J.; and Matsko, Joseph J., 4,331,997, Cl. 361-93.000.
Engel, Joseph C.; Wafer, John A.; Elms, Robert T.; and Saletta, Gary F., 4,331,999, Cl. 361-94.000.
Husson, Alan L., 4,331,220, Cl. 187-29.00R.
Matsko, Joseph J.; Whitt, Raymond O. D.; and Lange, Roy W., 4,331,996, Cl. 361-92.000.
Matsko, Joseph J.; Lange, Emroy W.; Engel, Joseph C.; and Mercier, Bernard J., 4,331,998, Cl. 361-93.000.
Wentz, John L., 4,331,387, Cl. 350-384.000.
Westip, Wilhelm, to Lohmann GmbH & Co. KG. Permanently elastic network bandage. 4,331,135, Cl. 128-156.000.
Westvaco Corporation: *See*—
Gilbert, Earl F., 4,331,234, Cl. 206-320.000.
Weyerhaeuser Company: *See*—
Wells, Roger, 4,331,510, Cl. 162-290.000.
Wharton, Paul B., Jr., to Kinetics Container Corporation. Carton. 4,331,287, Cl. 229-16.00D.
Wheatley , Thomas, Jr. Leakproof stud bolt incorporating modified thread. 4,331,414, Cl. 411-311.000.
Wheelwright, Robert W.; and Solender, Peter E., to Wurlitzer Company, The. Automatic chord control circuit for electronic musical instruments. 4,331,057, Cl. 84-1.170.
White Development Corporation: *See*—
Tudisco, Vincent J., 4,331,193, Cl. 145-29.00R.
White, Joanne. Terry cloth gloves (terry grippers). 4,330,887, Cl. 2-16.000.
White, Olin N., Jr. Insulated wall sections and methods of and apparatus for prefabricating the same. 4,330,921, Cl. 29-432.000.
White, Robert E. Tillage implement. 4,331,204, Cl. 172-70.000.
Whitman, Charles I.: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,331,478, Cl. 75-228.000.
Whitt, Raymond O. D.: *See*—
Matsko, Joseph J.; Whitt, Raymond O. D.; and Lange, Roy W., 4,331,996, Cl. 361-92.000.
Whitted, Hugh E., III, to Akzona Incorporated. Hydrostatic pipe splicing apparatus. 4,330,918, Cl. 29-237.000.
Whyman, Robin, to Imperial Chemical Industries Limited. Production of methane by hydrogenolysis of hydrocarbons and ruthenium catalysts therefor. 4,331,825, Cl. 585-752.000.
Wico Corporation: *See*—
Andary, Eddie J., 4,331,324, Cl. 254-2.00R.
Widmer, Hans, to Fritz Gegauf AG Bernina-Naehmaschinenfabrik. Device for simplification of sewing machine adjustments and set-up. 4,331,089, Cl. 112-121.110.
Wieder, Wolfgang; and Witte, Josef, to Bayer Aktiengesellschaft. Catalyst, preparation thereof and use thereof in the preparation of telomeric polybutadiene homo- or co-polymers. 4,331,823, Cl. 585-507.000.
Wiener, Daniel P.: *See*—
Flora, Laurence P.; and Wiener, Daniel P., 4,331,951, Cl. 340-347.0DD.
Wiesner, Karel; Marini-Bettolo, Rinaldo; Tsai, Connie S. J.; and Tsai, Thomas Y. R., to Advance Biofactures Corporation. Organometallic reagents and their use in the synthesis of cardenolides and isocardenolides. 4,331,802, Cl. 536-5.000.
Wiggins, Richard H., Jr.; and Brantingham, George L., to Texas Instruments Incorporated. Speech synthesis integrated circuit device. 4,331,836, Cl. 179-1.0SM.
Wilcox, Daniel G.: *See*—
Koepsel, Roger E.; Steiner, Ronald M.; and Wilcox, Daniel G., 4,331,429, Cl. 440-49.000.
Wilhere, Charles V., to Horix Manufacturing Company. Safety push rod assemblies. 4,331,186, Cl. 141-98.000.
Wilcocks, Martin E. G. Apparatus and method for playing a board game. 4,331,333, Cl. 273-238.000.
Willems, Victor: *See*—
Janssens, Theo; and Willems, Victor, 4,331,282, Cl. 228-124.000.
Willenbring, Armer J.; Osby, Warren J.; and Strunc, Gerald R., to Pako Corporation. Photographic film packing apparatus. 4,330,978, Cl. 53-435.000.
Willenbring, Armer J.: *See*—
Euteneuer, Charles L.; and Willenbring, Armer J., 4,331,260, Cl. 221-19.000.
Williams, John W.: *See*—
Gutman, Arnold D.; and Williams, John W., 4,331,480, Cl. 106-18.330.
Williams, Keith G.: *See*—
Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., 4,331,299, Cl. 239-691.000.
Williams, Malcolm L. Implement weight transfer. 4,331,345, Cl. 280-405.00B.
Williams, Michael L., to Dow Chemical Company, The. Process for inhibiting formation of nitrosamines. 4,331,468, Cl. 71-121.000.
Williams, Robert E.: *See*—
Farrar, David J.; Beck, Ralph W.; Preston, Edward G.; and Williams, Robert E., 4,331,165, Cl. 131-281.000.
Williams, Thomas D., to Vickers Limited. Value setting mechanism, particularly for franking machines. 4,331,075, Cl. 101-91.000.
Williams, Vincent P.; and Sandifer, Shelly S., to United States of America, Health and Human Services. Electric gel slicer. 4,331,054, Cl. 83-224.000.
Willis, Robert J.: *See*—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,331,680, Cl. 424-303.000.
Wilson, Charles A.: *See*—
Werner, John A.; Wilson, Charles A.; and Mixan, Craig E., 4,331,811, Cl. 546-345.000.

Wilson, Harold P., to Vulcan Materials Company. Bismuth composition, method of electroplating a tin-bismuth alloy and electroplating bath therefor. 4,331,518, Cl. 204-43.00S.

Wilson, Patricia A.: *See*—
Cox, Ronald I.; Hoskinson, Ronald M.; Scaramuzzi, Rex J.; Wilson, Patricia A.; and George, John M., 4,331,657, Cl. 424-88.000.

Wilson, Peggy M.; and Pao, Julie, to Mobil Oil Corporation. Method of retarding degradation of surfactants employed in waterflooding. 4,331,543, Cl. 252-8.55D.

Wilson, Richard A.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; and Vock, Manfred H., 4,331,611, Cl. 260-464.000.
Roudybush, Gerald L.; and Wilson, Richard A., 4,331,360, Cl. 297-422.000.

Wilson, Richard K., to International Nickel Co., Inc., The. Nickel-base hard facing alloy. 4,331,741, Cl. 428-679.000.

Wilson, Scott E., to Jodon Engineering Associates, Inc. Method and apparatus for measurement of engine ignition timing. 4,331,029, Cl. 73-117.300.

Windisch, Wendell W.: *See*—
Armstrong, William W.; Moppett, Charles E.; and Windisch, Wendell W., 4,331,599, Cl. 260-245.20R.

Windmoller & Holscher: *See*—
Achelpohl, Fritz; and Mundus, Friedhelm, 4,331,502, Cl. 156-515.000.

Winkler, Alfred; Engelsmann, Dieter; Schroder, Rolf; and Maas, Dieter, to Agfa-Gevaert AG. Miniature still camera with expansible housing. 4,331,407, Cl. 354-187.000.

Winter, Arthur. Multiple sclerosis treatment. 4,331,145, Cl. 128-207.210.

Wintermantel, Erich: *See*—
Braun, Karl; Hilzinger, Fritz; and Wintermantel, Erich, 4,331,150, Cl. 128-334.00C.

Wirth, William F., to Borg-Warner Corporation. Shoothrough fault protection system for a voltage source transistor inverter. 4,331,994, Cl. 361-56.000.

Wissmann, Hans; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the preparation of carboxylic acid amides and peptides. 4,331,592, Cl. 260-112.50R.

Witsoe, David A., to Baxter Travenol Laboratories, Inc. Process for draining dialysate from artificial kidney. 4,331,540, Cl. 210-646.000.

Witte, Josef: *See*—
Wieder, Wolfgang; and Witte, Josef, 4,331,823, Cl. 585-507.000.

Woessner, Warren D.: *See*—
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., 4,331,688, Cl. 424-331.000.

Wojciechowski, Jerzy; Haber, Jerzy; Gozdziewicz, Zygmunt; and Lange, Edward, to Polska Akademia Nauk, Instytut Katalizy i Fizykochemii Powierzchni. Method for storage of horticultural products in freshness. 4,331,693, Cl. 426-419.000.

Wolf, Tobin. Lever control for realistic driving toy. 4,331,849, Cl. 200-61.850.

Wolfe, John E., to Burroughs Corporation. Shadow casting electron-beam system. 4,331,875, Cl. 250-398.000.

Wolfgang, Herchenbach, to Rodi & Wienenberger AG. Adjustable deployment band. 4,330,905, Cl. 24-71.00J.

Wolfthal, Maurice, to Stewart Stamping Corporation. Wire stripping and terminating apparatus. 4,330,927, Cl. 29-564.400.

Wolpert, Stephen M., to Hooker Chemicals & Plastics Corp. Process for improving the corrosion resistance of conversion coated parts. 4,331,715, Cl. 427-240.000.

Woodruff, Harold F. Cable laying apparatus. 4,331,322, Cl. 254-134.3FT.

Woodward, Robert B.: *See*—
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,331,676, Cl. 424-270.000.

Worst, Joseph C. Baseball bat with improved hitting surface and less mass. 4,331,330, Cl. 273-72.00R.

Wright, Beth G.: *See*—
Isaacson, Henry V.; Wright, Beth G.; and Wright, Hal E., 4,331,751, Cl. 430-18.000.

Wright, Hal E.: *See*—
Isaacson, Henry V.; Wright, Beth G.; and Wright, Hal E., 4,331,751, Cl. 430-18.000.

Wright, W. Andrew, Jr.: *See*—
Cogswell, Ned W.; Eskin, Gerald J.; and Wright, W. Andrew, Jr., 4,331,974, Cl. 358-86.000.

Wuckel, Hildebert: *See*—
Bajohr, Walter; and Wuckel, Hildebert, 4,331,079, Cl. 102-202.120.

Wurlitzer Company, The: *See*—
Wheelwright, Robert W.; and Solender, Peter E., 4,331,057, Cl. 84-1.170.

Xerox Corporation: *See*—
Luo, Fang C., 4,331,758, Cl. 430-313.000.
McCrobie, George L.; Rees, James D.; and Donnel, Roscoe J., 4,331,388, Cl. 350-419.000.
Rees, James D.; Kay, David B.; and Lama, William L., 4,331,380, Cl. 350-96.250.
Stephan, Craig H., 4,331,754, Cl. 430-102.000.

Yamada, Kimichika: *See*—
Kawarada, Tsutomu; Yamada, Kimichika; Sango, Hiroshi; and Kiyokawa, Katsushige, 4,331,398, Cl. 353-113.000.

Yamada, Masanori: *See*—
Kiuchi, Masayoshi; Kawamura, Masaharu; Yamada, Masanori; and Murakami, Hiroyasu, 4,331,406, Cl. 354-128.000.

Yamaguchi, Noboru; and Wakasugi, Hideaki, to Nissan Motor Company, Limited. Fuse block cover. 4,332,002, Cl. 361-432.000.

Yamamoto, Akira: *See*—
Taguchi, Kenichi; Yamamoto, Akira; Ishihara, Toshinobu; Takasaka, Nobuo; and Shimizu, Hisashi, 4,331,820, Cl. 570-189.000.

Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Camera with speed light device. 4,331,405, Cl. 354-126.000.

Yamamoto, Saburo: *See*—
Tamaki, Kazufuto; Iwazaki, Tadayoshi; Takayanagi, Shigeo; and Yamamoto, Saburo, 4,331,617, Cl. 261-72.00R.

Yamamoto, Yoshihiro; Sakurai, Kenji; and Tanaka, Hiroshi, to NGK Spark Plug Co., Ltd. Alumina sintered products and process for their production. 4,331,627, Cl. 264-332.000.

Yamamoto, Yoshimi: *See*—
Matsuoka, Hideoki; and Yamamoto, Yoshimi, 4,331,304, Cl. 242-107.40A.

Yamasaki, Yasuo: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,331,822, Cl. 585-482.000.

Yamauchi, Hiroshi: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Kanai, Takeo; and Saito, Isao, 4,331,606, Cl. 549-402.000.

Yamauchi, Yukio, to Hochiki Corporation. Temperature detecting apparatus. 4,331,888, Cl. 340-598.000.

Yamazaki, Masafumi: *See*—
Nakajima, Yoshio; Takayama, Shuichi; Tsuboshima, Kosaku; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,331,864, Cl. 250-204.000.

Yamazaki, Michio: *See*—
Nishikuri, Masao; Yamazaki, Michio; Kojima, Kiyoteru; Seino, Junzaburo; and Kenmochi, Hirohito, 4,331,584, Cl. 524-206.000.

Yanney, James F. M., Jr. Method and apparatus for connecting an artificial tooth portion to a dentin portion. 4,331,423, Cl. 433-225.000.

Yasui Sangyo Co., Ltd.: *See*—
Suzuki, Yasunori, 4,331,219, Cl. 187-8.500.

Yasukawa, Shiro: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Hiraharu, Teruo; and Yasukawa, Shiro, 4,331,784, Cl. 525-313.000.

Yazawa, Hiroshi: *See*—
Yazawa, Masahide; Yazawa, Hiroshi; Tani, Haruhisa; and Kurihara, Kazuhiko, 4,331,624, Cl. 264-160.000.

Yazawa, Masahide; Yazawa, Hiroshi; Tani, Haruhisa; and Kurihara, Kazuhiko, to Nippon Petrochemicals Co., Ltd.; and Polymer Processing Research Institute Ltd. Method and apparatus for biaxially stretching a tubular film. 4,331,624, Cl. 264-160.000.

Yazawa, Yasuhiro; and Muroi, Kishiro, to Ohi Seisakusho Co. Ltd. Lock releasing device for locks of a fuel oil tank lid and a trunk lid of a vehicle. 4,331,353, Cl. 292-28.000.

Yerman, Alexander J., to General Electric Company. Use of dispersed solids as fillers in polymeric materials to provide material for semiconductor junction passivation. 4,331,970, Cl. 357-72.000.

Yokomizo, Hiroshi; Nishizawa, Masahiro; Tomita, Yoshifumi; Miura, Kiyoshi; and Sasaya, Osamu, to Hitachi, Ltd. Method of forming fluorescent screens of color picture tubes. 4,331,752, Cl. 430-28.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Gain-controlled amplifier. 4,331,929, Cl. 330-254.000.

Yordanov, Nikolay V.: *See*—
Minchev, Pavel M.; Hristov, Hristomir D.; Lazarov, Stoyan R.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,331,279, Cl. 228-37.000.

Yorizumi, Mineo; and Makino, Yoshimi, to Sony Corporation. Ferrite single crystal and magnetic head containing the same. 4,331,548, Cl. 252-62.610.

Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu, 4,331,168, Cl. 132-79.00G.

Yoshida, Kenji: *See*—
Isogaya, Kazuyoshi; Sugiyama, Eiiti; Yoshida, Kenji; and Kikuchi, Katsutoshi, 4,331,451, Cl. 48-214.00A.

Yoshida Kogyo K.K.: *See*—
Murasaki, Ryuichi, 4,331,181, Cl. 139-431.000.
Ochiai, Koichi, 4,330,907, Cl. 24-204.000.
Takahashi, Kihei, 4,331,180, Cl. 139-35.000.

Yoshida, Shigeru: *See*—
Hiramatu, Eizi; Nakagawa, Yasushi; Sato, Hidenori; and Yoshida, Shigeru, 4,331,120, Cl. 123-519.000.

Yoshida, Takashi: *See*—
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Yoshida, Takeo: *See*—
Hamada, Minoru; Sakurai, Hisaya; Masamoto, Jyunzo; Yoshida, Takeo; and Hazawa, Hiroshi, 4,331,439, Cl. 8-442.000.

Yoshiike, Nobuyuki: *See*—
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Yoshioka, Teruhiko: *See*—
Ikeda, Minoru; Yoshioka, Teruhiko; and Inoue, Kazutaka, 4,331,824, Cl. 585-638.000.

Yoshioka, Toshihiro: *See*—
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Young, Archie R.: *See*—
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Young, John S.: *See*—
Tarr, Lloyd A.; Taylor, John P.; and Young, John S., 4,331,843, Cl. 179-175.20R.

Young, Rodney C.: *See*—
Roantree, Michael L.; and Young, Rodney C., 4,331,668, Cl. 424-263.000.

Zabrocki, Karl; Bottenbruch, Ludwig; and Weider, Franz, to Bayer Aktiengesellschaft. Aqueous dispersions of urethane-modified polyesters, a process for their production and their use for the production of lacquers. 4,331,573, Cl. 524-199.000.

Zahnradfabrik Friedrichshafen, A.G.: *See*—
Lang, Armin, 4,331,211, Cl. 180-141.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Shiota, Ikuo, 4,331,737, Cl. 428-457.000.

Zanardi, Stefano, to Lazzari S.p.A. Testing device for passing inside caliper gauges through pipes and the like. 4,330,943, Cl. 33-178.00R.

Zannini, Henry A.: *See*—
Epstein, Richard A.; and Zannini, Henry A., 4,332,011, Cl. 364-200.000.

Zavitsanos, Peter D.: *See*—
West, Martin M.; and Zavitsanos, Peter D., 4,331,080, Cl. 102-301.000.

Zeibig, Siegfried, to VEB Pentacon Dresden Kamera- und Kinowerke. Photographic bellows unit. 4,331,408, Cl. 354-191.000.

Zeidler, Gunter: *See*—
Oestreich, Ulrich; Zeidler, Gunter; and Schober, Gernot, 4,331,379, Cl. 350-96.230.

Zenith Radio Corporation: *See*—
Bretl, Wayne E., 4,331,971, Cl. 358-37.000.
Cohn, William E.; and Nowaczyk, Philip J., 4,331,977, Cl. 358-188.000.
Nowaczyk, Philip J., 4,331,978, Cl. 358-190.000.

Zerle, Ludwig: *See*—
Peschke, Jurgen; Mair, Franz; and Zerle, Ludwig, 4,330,909, Cl. 26-75.000.

Ziegler, Johannes, to Feldmuhle Anlagen-und Produktionsgesellschaft mbH. Method for preparing a finished concrete part. 4,331,628, Cl. 264-553.000.

Ziemek, Gerhard: *See*—
Klebl, Wolfram; Schatz, Friedrich; and Ziemek, Gerhard, 4,331,281, Cl. 228-125.000.

Zilog, Inc.: *See*—
Shima, Masatoshi; Faggin, Federico; and Ungermann, Ralph K., 4,332,008, Cl. 364-200.000.

Zimmer, Eric H. Instant hot water supply system. 4,331,292, Cl. 237-19.000.

Zimmerman, Robert R.: *See*—
Helderman, Earl R.; and Zimmerman, Robert R., 4,331,476, Cl. 75-214.000.

Zimmermann, Frank: *See*—
Heidemeyer, Paulus; Zimmermann, Frank; and Scholz, Romanus, 4,331,226, Cl. 192-0.076.

Zimmermann, Wolfgang; and Pospich, Gunther, to Hoechst Aktiengesellschaft. Process for the preparation of a polyvinyl alcohol complex compound in the presence of an organic boric acid derivative. 4,331,781, Cl. 525-61.000.

Zito, John J., Sr. Method for detecting and recording physiological changes accompanying emotional stresses. 4,331,160, Cl. 128-734.000.

Zlab, Victor K.: *See*—
Silva, Wilbur W.; and Zlab, Victor K., 4,331,310, Cl. 248-146.000.

Zorska, Roman: *See*—
Huba, Francis; and Zorska, Roman, 4,331,525, Cl. 204-181.00F.

Zosel, Kurt, to Studiengesellschaft Kohle mbH. Production of fats and oils from vegetable and animal products. 4,331,695, Cl. 426-430.000.

Zurkoff, Bernard; and Lucas, Bennie M., to El Paso Polyolefins Company. Polymer flow through die. 4,331,623, Cl. 264-141.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MAY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Cyanamid Company: *See*—
Hoffman, Joseph A.; Savides, Christos; and Oppelt, John C., Re. 30,946, Cl. 524-120.000.

Bayer AG: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Boyd, Douglas P., to Stanford University. Method and apparatus for X-ray or γ-ray 3-D tomography using a fan beam. Re. 30,947, Cl. 250-445.00T.

Crosby, Lawton H., to Morley Furniture Spring Corp. Seat base rail connector and assembly. Re. 30,941, Cl. 267-110.000.

Deutsche Gold-und Silver Scheideanstalt Vormals Roessler: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Garvey, Edward N.: *See*—
Kowal, Leonard J.; and Garvey, Edward N., Re. 30,940, Cl. 72-115.000.

Gould Inc.: *See*—
Kowal, Leonard J.; and Garvey, Edward N., Re. 30,940, Cl. 72-115.000.

Hoffman, Joseph A.; Savides, Christos; and Oppelt, John C., to American Cyanamid Company. Polymeric pentaerythrityl phosphonates and their use as flame retardants. Re. 30,946, Cl. 524-120.000.

Jackson, Melbourne L., to Research Corporation. Continuous fermentation process and apparatus. Re. 30,944, Cl. 210-608.000.

Kowal, Leonard J.; and Garvey, Edward N., to Gould Inc. Flaring tool. Re. 30,940, Cl. 72-115.000.

Morley Furniture Spring Corp.: *See*—
Crosby, Lawton H., Re. 30,941, Cl. 267-110.000.

Nicholson, John P., to Nicholson Realty Ltd. Stabilized mixture. Re. 30,943, Cl. 106-85.000.

Nicholson Realty Ltd.: *See*—
Nicholson, John P., Re. 30,943, Cl. 106-85.000.

Oppelt, John C.: *See*—
Hoffman, Joseph A.; Savides, Christos; and Oppelt, John C., Re. 30,946, Cl. 524-120.000.

Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, to Bayer AG; and Deutsche Gold-und Silver Scheideanstalt Vormals Roessler. Process for the preparation of propylene oxide. Re. 30,945, Cl. 549-526.000.

RCA Corporation: *See*—
Schade, Otto H., Jr., Re. 30,948, Cl. 330-288.000.

Research Corporation: *See*—
Jackson, Melbourne L., Re. 30,944, Cl. 210-608.000.

Savides, Christos: *See*—
Hoffman, Joseph A.; Savides, Christos; and Oppelt, John C., Re. 30,946, Cl. 524-120.000.

Schade, Otto H., Jr., to RCA Corporation. Dynamic current supply. Re. 30,948, Cl. 330-288.000.

Schreyer, Gerd: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Schwerdtel, Wulf: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Seifert, Hermann: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Sekiguchi, Tadao, to Trio Kabushiki Kaisha. Digital frequency display device. Re. 30,949, Cl. 455-158.000.

Stanford University: *See*—
Boyd, Douglas P., Re. 30,947, Cl. 250-445.00T.

Swodenk, Wolf: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Takenaka, George, to Tracor, Inc. Printing apparatus employing bidirectional stepping motors to position type member. Re. 30,942, Cl. 400-154.200.

Tracor, Inc.: *See*—
Takenaka, George, Re. 30,942, Cl. 400-154.200.

Trio Kabushiki Kaisha: *See*—
Sekiguchi, Tadao, Re. 30,949, Cl. 455-158.000.

Waldmann, Helmut: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Weiberg, Otto: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

Wirthwein, Rolf: *See*—
Prescher, Guter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 30,945, Cl. 549-526.000.

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Adidas Fabrique de Chaussures de Sport: *See*—
Joseph, Michel, 264,516, Cl. D2-40.000.

Allied Plastics, Inc.: *See*—
Page, Cornelius D., Jr., 264,525, Cl. D3-40.000.

Amato, Tara A., to ATC Greeting Card Co. Doll. 264,609, 5-25-82, Cl. D21-166.000.

American Standard Inc.: *See*—
Kaiser, Jack N., 264,620, Cl. D23-65.000.

Anchor Hocking Corporation: *See*—
Pettengill, Floyd E.; and O'Toole, David M., 264,559, Cl. D9-385.000.

Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., to S. C. Johnson & Son, Inc. Bottle. 264,560, 5-25-82, Cl. D9-389.000.

Appliance Design Probe, Inc.: *See*—
Barradas, George, 264,637, Cl. D28-38.000.

Ashley, Roscoe W. Barbeque grill cleaner. 264,543, 5-25-82, Cl. D32-49.000.

Aston, Christopher J.; and Hart, Claude A., to Dunlop Limited. Tire sidewall. 264,575, 5-25-82, Cl. D12-152.000.

ATC Greeting Card Co.: *See*—
Amato, Tara A., 264,609, Cl. D21-166.000.

Aulbert, Harold V.; and Horton, Charles M., to Burlington Furniture Div. of Burlington Industries, Inc. Dresser or the like. 264,530, 5-25-82, Cl. D6-154.000.

Baker Industries, Inc.: *See*—
Jaretsky, Michael G., 264,564, Cl. D10-106.000.

Barr, Josef J. Finger ring. 264,566, 5-25-82, Cl. D11-30.000.

Barradas, George, to Appliance Design Probe, Inc. Hair setter. 264,637, 5-25-82, Cl. D28-38.000.

Basic Concept Ltd.: *See*—
Pearlman, Jerome T., 264,633, Cl. D26-62.000.

Bates Manufacturing Company, The: *See*—
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Becker, Charles P., Jr., to Charles Becker Associates, Inc. Fireplace insert. 264,621, 5-25-82, Cl. D23-94.000.

Birtcil, Fred R. Combined canvas mesh holder and yarn strand receptacles. 264,519, 5-25-82, Cl. D3-23.000.

Bobinger, Karl J.: *See*—
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 264,560, Cl. D9-389.000.

Bogren, John O., to Hewlett-Packard Company. Fastener. 264,552, 5-25-82, Cl. D8-387.000.

Bradbury, Robert C. Dual pen holder. 264,607, 5-25-82, Cl. D19-85.000.

Bruveris, Aivars. Grill. 264,541, 5-25-82, Cl. D7-109.000.
Burlington Furniture Div. of Burlington Industries, Inc.: *See*—
Aulbert, Harold V.; and Horton, Charles M., 264,530, Cl. D6-154.000.
Carson, Michael: *See*—
Fether, Kenneth B.; Grosse, Maurice; and Carson, Michael, 264,532, Cl. D6-191.000.
Castleberry, Louise I. Lavatory or similar article. 264,619, 5-25-82, Cl. D23-62.000.
Charles Becker Associates, Inc.: *See*—
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Chloride Group Limited: *See*—
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Christian, Hubert E.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 264,557, Cl. D9-349.000.
Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 264,528, Cl. D6-9.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 264,630, Cl. D24-45.000.
Conti, Rino: *See*—
Kato, Masao; and Conti, Rino, 264,527, Cl. D3-73.000.
Cramer, Ronald G.: *See*—
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 264,560, Cl. D9-389.000.
Dart Industries Inc.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 264,557, Cl. D9-349.000.
Kato, Masao; and Conti, Rino, 264,527, Cl. D3-73.000.
Delgado, Elsa L.: *See*—
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Design Alliance, Inc.: *See*—
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de Vos, Hendrik A. J.: *See*—
Labouliere, Elzear R.; Michaud, Albert J.; and de Vos, Hendrik A. J., 264,635, Cl. D26-67.000.
D'Innocente, Ralph; and Janosko, Richard L., to Jacuzzi Whirlpool Bath, Inc. Hydrotherapy spa. 264,626, 5-25-82, Cl. D24-38.000.
Dorsey, Charles L.; Dorsey, Donald L.; and Richardson, Sam M., III. Portable boat ramp. 264,579, 5-25-82, Cl. D12-317.000.
Dorsey, Donald L.: *See*—
Dorsey, Charles L.; Dorsey, Donald L.; and Richardson, Sam M., III, 264,579, Cl. D12-317.000.
Doyel, John S. Kitchen slicer. 264,542, 5-25-82, Cl. D7-153.000.
Drew, Douglas, to Noma Canada Ltd. Plug for electric cord. 264,582, 5-25-82, Cl. D13-28.000.
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Dunlop Limited: *See*—
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Englishtown Sportswear, Ltd.: *See*—
Heinfling, Martin, 264,515, Cl. D2-28.000.
Ewbank Mfg. Division, Inc.: *See*—
Thomas, G. Richard, 264,590, Cl. D15-21.000.
Fargo, Larry S.: *See*—
Wight, Brad T.; and Fargo, Larry S., 264,553, Cl. D8-396.000.
Wight, Brad T.; and Fargo, Larry S., 264,554, Cl. D8-396.000.
Fether, Kenneth B.; Grosse, Maurice; and Carson, Michael, to Planned Space Products Limited. Furniture support bracket. 264,532, 5-25-82, Cl. D6-191.000.
Fiber Optics Systems, Inc.: *See*—
Tiffany, Thomas L., 264,632, Cl. D26-27.000.
Flaceliere, Bernard, to Logabax. Printer ribbon cassette. 264,601, 5-25-82, Cl. D18-12.000.
Forsberg, Ulla I., to Duni Bila AB. Sanitary pants for urinal receptacles. 264,631, 5-25-82, Cl. D24-51.000.
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Freeman, Alan J., to Walter Kidde & Company, Inc. Fire extinguishant discharge nozzle. 264,617, 5-25-82, Cl. D23-35.000.
Fuchslin, Stefan: *See*—
Neilson, David R., 264,577, Cl. D12-162.000.
Galbreath, Donna S. Doll. 264,610, 5-25-82, Cl. D21-170.000.
Garrett, William E., to Progressive Technology, Inc. Combined container and dispenser for rolls of strips of labels or the like. 264,520, 5-25-82, Cl. D3-30.100.
Gaston, Pick. Gas cap for vehicle tanks. 264,578, 5-25-82, Cl. D12-197.000.
Geer, Mary W. Toy mask. 264,611, 5-25-82, Cl. D21-190.000.
Godwin, Thomas L. Pickup truck bed enclosure. 264,576, 5-25-82, Cl. D12-156.000.
Grego, Joseph F., Jr. Flywheel pulling tool. 264,546, 5-25-82, Cl. D8-51.000.
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., to Dart Industries Inc. Packaging container. 264,557, 5-25-82, Cl. D9-349.000.
Grosse, Maurice: *See*—
Fether, Kenneth B.; Grosse, Maurice; and Carson, Michael, 264,532, Cl. D6-191.000.
GTE Products Corporation: *See*—
Labouliere, Elzear R.; Michaud, Albert J.; and de Vos, Hendrik A. J., 264,635, Cl. D26-67.000.
Haft, Theodore. Garment carrier. 264,526, 5-25-82, Cl. D3-71.000.
Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner. 264,544, 5-25-82, Cl. D8-5.000.
Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner. 264,545, 5-25-82, Cl. D8-5.000.
Hart, Claude A.: *See*—
Aston, Christopher J.; and Hart, Claude A., 264,575, Cl. D12-152.000.
Hayashi Denki Company Ltd.: *See*—
Sugawara, Masuo; and Matsumoto, Hiroji, 264,623, Cl. D24-20.000.
Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 264,515, 5-25-82, Cl. D2-28.000.
Hestehave, Borge; and Hestehave, Kjeld. Combined container for liquids and holder therefor. 264,556, 5-25-82, Cl. D9-337.000.
Hestehave, Kjeld: *See*—
Hestehave, Borge; and Hestehave, Kjeld, 264,556, Cl. D9-337.000.
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Holiday Pools Corporation: *See*—
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Longmire, Thomas H., 264,628, Cl. D24-38.000.
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Hull, Donald A. Foam generator for a car wash or the like. 264,616, 5-25-82, Cl. D23-34.000.
Hurley, Thomas P. Stool for invalids or the like. 264,618, 5-25-82, Cl. D23-48.000.
International Standard Electric Corporation: *See*—
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Janosko, Richard L.: *See*—
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Jensen, Edward A. Belt hanger. 264,533, 5-25-82, Cl. D6-255.000.
JH Industries, Inc.: *See*—
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Johnson, Dwight N., to JH Industries, Inc. Faucet. 264,615, 5-25-82, Cl. D23-25.000.
Johnson, Lester L., Sr. Container for an oil filter or the like. 264,614, 5-25-82, Cl. D23-4.000.
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Kaiser, Jack N., to American Standard Inc. Water closet or similar article. 264,620, 5-25-82, Cl. D23-65.000.
Kato, Masao; and Conti, Rino, to Dart Industries Inc. Storage case or the like. 264,527, 5-25-82, Cl. D3-73.000.
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Kiyokane, Jerrilyn, to Namkung Promotions, Inc. Drinking glass. 264,535, 5-25-82, Cl. D7-6.000.
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Krosunger, Peter. Tool attachment. 264,548, 5-25-82, Cl. D8-70.000.
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Kvasnicka, Donald A. Swag lamp. 264,636, 5-25-82, Cl. D26-84.000.
Labouliere, Elzear R.; Michaud, Albert J.; and de Vos, Hendrik A. J., to GTE Products Corporation. Luminaire. 264,635, 5-25-82, Cl. D26-67.000.
Lapsley, John S. Device to indicate the position of the sun at different times. 264,562, 5-25-82, Cl. D10-65.000.
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Leib, William S., III, to Bates Manufacturing Company, The. List finder. 264,605, 5-25-82, Cl. D19-76.000.

Leung, Chung S., to Foster Industries Co., Ltd. Vehicle battery condition indicator. 264,563, 5-25-82, Cl. D10-75.000.
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Longmire, Thomas H., to Holiday Pools Corporation. Hydrotherapy pool. 264,628, 5-25-82, Cl. D24-38.000.
Longmire, Thomas H., to Holiday Pools Corporation. Hydrotherapy pool. 264,629, 5-25-82, Cl. D24-38.000.
Lowe, Brian A., to Racal Acoustics Limited. Hinged boom arm for a microphone headset. 264,587, 5-25-82, Cl. D14-36.000.
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Lyons, Michael M. Bulk dispenser or similar article. 264,593, 5-25-82, Cl. D15-111.000.
Lyons, Michael M. Bulk dispenser or similar article. 264,594, 5-25-82, Cl. D15-111.000.
Lyons, Michael M. Bulk dispenser or similar article. 264,595, 5-25-82, Cl. D15-111.000.
Lyons, Michael M. Bulk dispenser or similar article. 264,596, 5-25-82, Cl. D15-111.000.
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McKeeman, Nigel K., to Chloride Group Limited. Electric battery. 264,580, 5-25-82, Cl. D13-8.000.
Medeiros, John V. Vehicle safety signal. 264,565, 5-25-82, Cl. D10-109.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

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69.5 4,330,889
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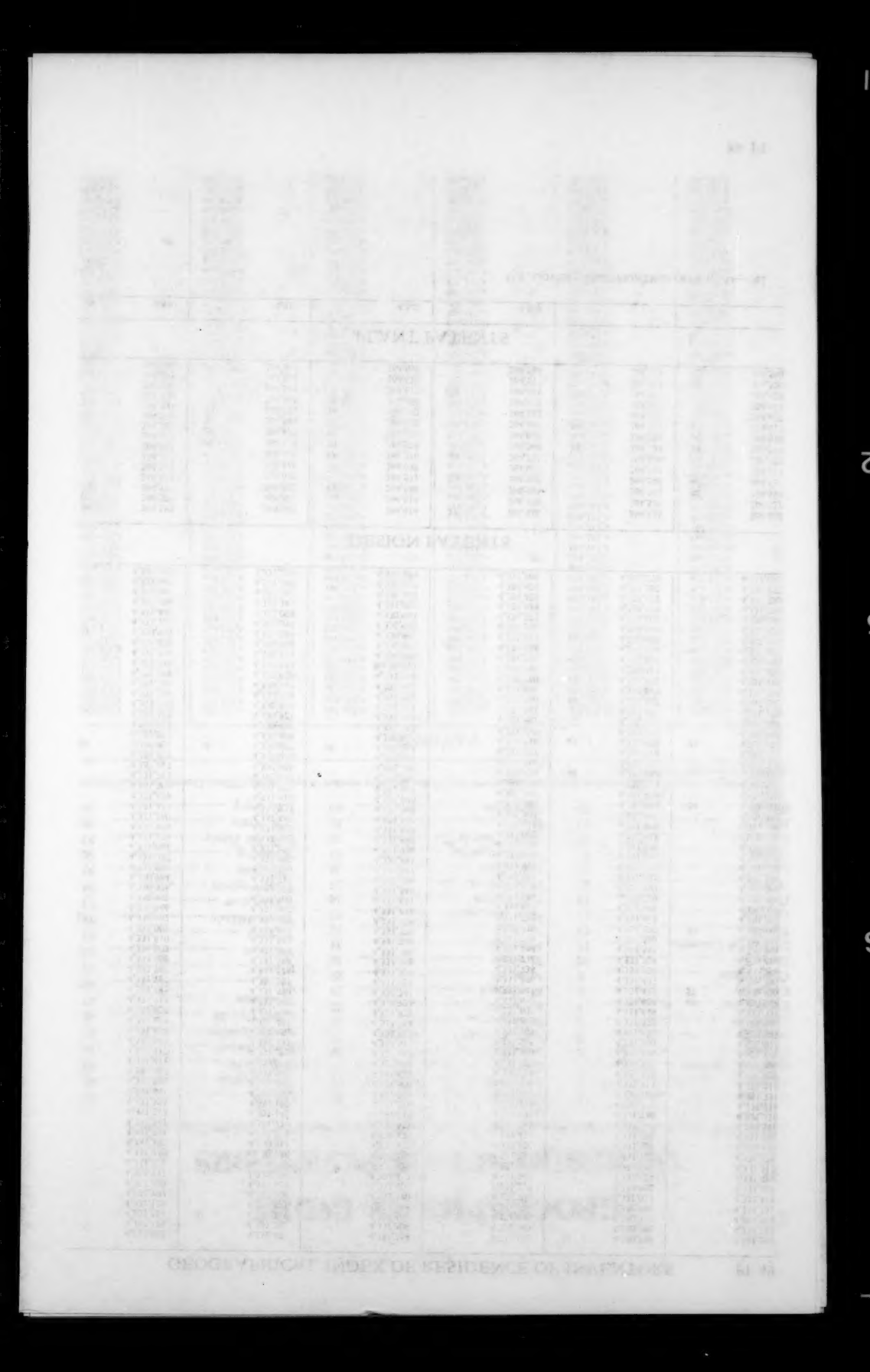

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